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THE BUMP IN THE LIGHT CURVE OF VARIABLE 1 IN M13

Pike and Meston (IBVS No. 1177, 1976) report that they have examined a series of V plates of the globular cluster of M13 and found that Variable 1 of the cluster shows a bump on the rising branch of the light curve. They conclude, however, that this feature is not the same as the bump that Osborn and Rosenzweig (IBVS No.1126, 1976) suggested was present. In fact, these two bumps are identical. Osborn and Rosenzweig's bump was found to occur at phase 0.8 after maximum light, that is on the rising branch of the light curve at phase 0.2 before maximum. Using Stobie's (Observatory 93, 111, 1973) equation (1) and Pike and Meston's derived value for the radius of M13 Variable 1 it is easy to show that their bump occurs at $\varphi_V = 1.49$, which is equivalent to $\varphi_\ell = 0.3$ on the light curve adopting Stobie's relation that $\varphi_V = \varphi_\ell + 0.2$. That this is on the rising branch of the light curve implies that their phases are referred to minimum, rather than maximum light as in the case of Osborn and Rosenzweig. Thus, their bump also occurs about phase 0.2 before maximum and the differences in the derived masses and radii are therefore just due to the 0.5 difference in the phase systems.

This author found Stobie's explanation of how the phase should be determined somewhat confusing and the more common reference to the maximum was adopted. However, comparison of Stobie's listed values of φ_ℓ with the published light curves for the respective stars shows his equations are for phases referred to minimum and hence Pike and Meston's results for the mass and radius should be preferred.

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