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1982-1990 UBV OBSERVATIONS OF AM LEONIS

The W UMa system AM Leo is the brighter component of ADS 8024 = Σ1503. The magnitude difference between the faint and bright components of the visual double was measured at maximum light to be 1.55 mag in the yellow and 1.69 mag in blue light by Eggen (1967). The system was observed photoelectrically without a filter by Worley and Eggen (1956) and Abrami (1959); in B and V filters by Binnendijk (1969); and in 5125 Å, 5170 Å and B filters by Hoffmann and Hopp (1982). Observations by Hoffmann and Hopp form complete light curves in 1977, but incomplete (only 60%) light curves in 1980 and 1981. The spectral type F8 was assigned to the system by Hill et al. (1975), but unfortunately no radial velocity curve was published for this system. Thus the absolute dimension of AM Leo is not known. The light curves of AM Leo are so variable in time that the type of the system sometimes changes from A-type to W-type or vice versa. The system was W-type in 1959 and 1969 observation, but A-type in 1977 observations. It shifted back to W-type in 1980 and 1981 observation.

In order to follow light curve variations we included AM Leo in our observing program in 1982, and have observed it in every observing season since then. The photoelectric observations in U, B and V filters were made with the 30 cm Maksutov telescope at Ankara University Observatory, including the light of the faint visual double star component. Differential observations (4 nights in 1982, and 3 nights each in 1988, 1989 and 1990) were secured by using EMI 6256S photomultiplier in 1982, and EMI 9789QB in the following years. The same comparison star BD+10°2235 as used by Binnendijk (1969) was observed frequently. Differential brightness measurements of the comparison with respect to the check star (BD+10°2233) were found sensibly constant during the observations. The individual magnitude determinations were corrected for differential atmospheric extinction. Thus altogether 51 differential measurements in each filter in 1982, 107 differential measurements in 1988 and 97 differential measurements in 1989 were secured. The

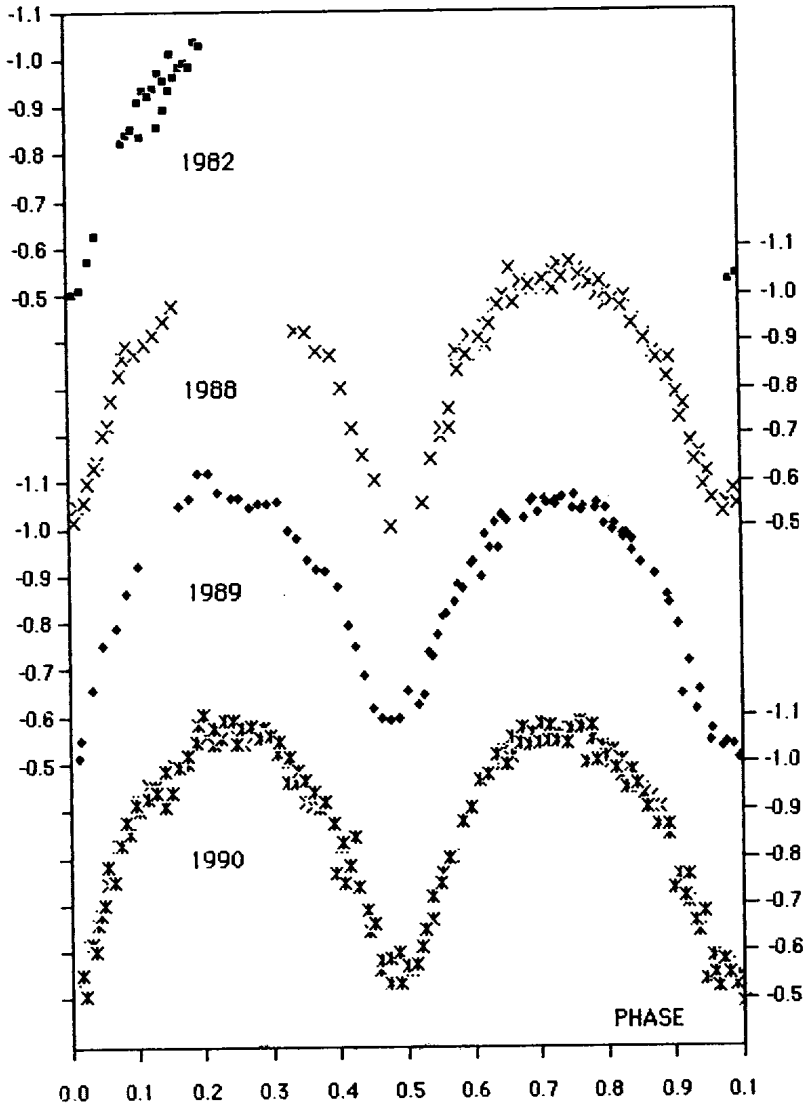

Figure 1. 1982 - 1990 B-light curves of AM Leo

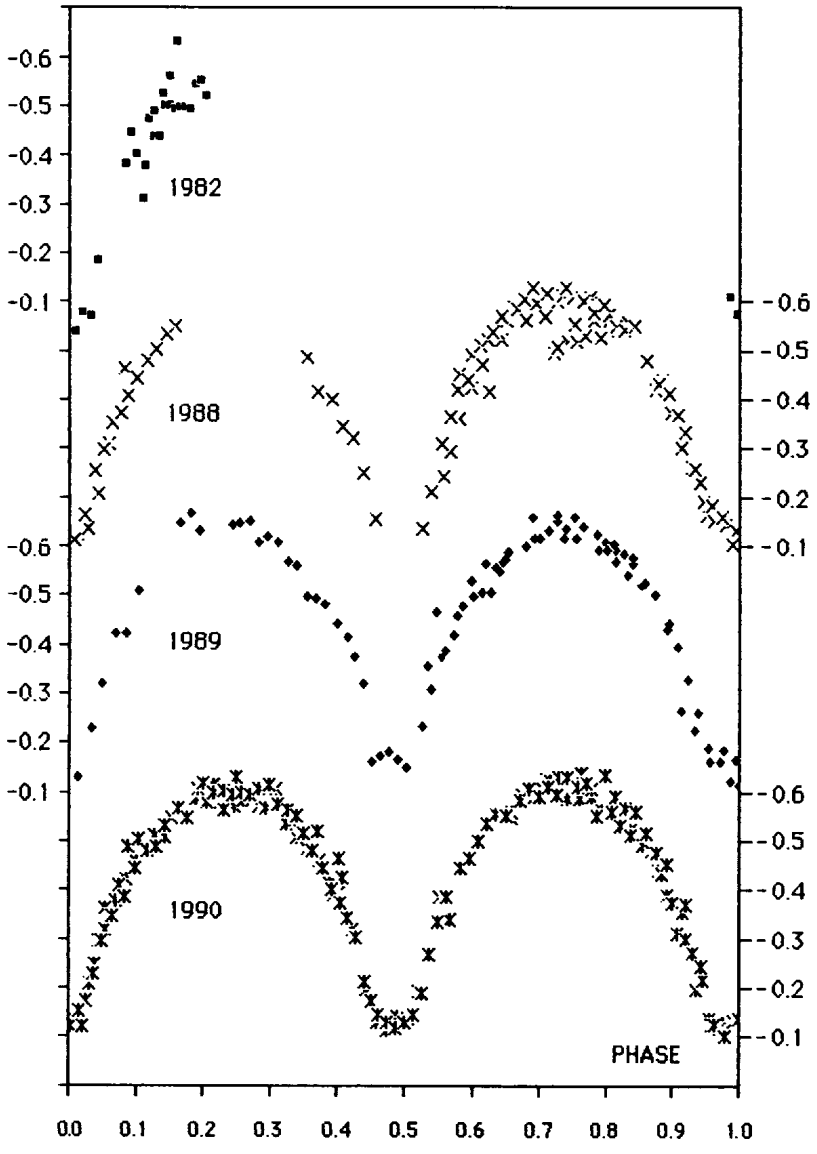

Figure2. 1982 - 1990 V-light curves of AM Leo.

phase of the observations was calculated by using Binnendijk's (1969) light elements

$$\text{MinI} = \text{H.J.D. } 2439936.8337 + 0^{d}.36579720 \cdot E$$

and the light curves in V and B passbands are plotted in Figures 1 and 2 for the years 1982, 1988, 1989 and 1990 separately. Although the observing intervals are not long in every observing season, the spread in the observations, particularly in U filter, was found somewhat larger than expected. The 1982 observations cover only 25% of the light curve in the rising branch of the primary maximum. The 20 % of the 1988 light curve is missing in the primary maximum but whole light curves were obtained in the 1989 and 1990 observing seasons. The primary minimum is deeper in 1989 and 1990 while the secondary minimum was deeper ($\approx$0.03 mag in B) in 1988 light curves. The primary minimum was found to be total occultation by Binnendijk. Thus the system was W-type in 1969 observations, A-type in 1977 observation, W-type again in 1980 and 1981 observations (cf. Hoffmann and Hopp, 1982). We found that the system was A-type again in 1988. It is still in W-type but we expect it will shift again to A-type probably in 1991 or 1992.

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