IMPROVED EPHEMERIS FOR AQ Com

CSIZMADIA, SZ.[1]; BORKOVITS, T.[2,3]

[1] Konkoly Observatory, H–1025 Budapest, P.O. Box 67, Hungary
e-mail: csizmadia@konkoly.hu

[2] Baja Astronomical Observatory of Bács-Kiskun County, H–6500 Baja, P.O. Box 766, Hungary
e-mail: borko@electra.bajaobs.hu

[3] Guest observer at Konkoly Observatory

The light variation of AQ Comae Berenices = SV 8064 ($\alpha_{2000} = 12^\mathrm{h}42^\mathrm{m}42\overset{\mathrm{s}}{.}7$, $\delta_{2000} = +21°52'18''$) was discovered and classified as a W UMa-type star by Hoffmeister (1964) but he did not publish the light-curve. The object was put into the "Catalogue of Eclipsing and Spectroscopic Binary Stars in the Regions of Open Clusters" (Kraicheva and Popova, 1984) as a possible member of the Coma star cluster (Melotte 111).

The exact position was determined by Skiff (1999). The General Catalogue of Variable Stars (Kholopov et al., 1998) lists $15\overset{\mathrm{m}}{.}2$ - $15\overset{\mathrm{m}}{.}7$ for the range of variability and $0\overset{\mathrm{d}}{.}28208$ for the period. According to our best knowledge there is no published CCD photometry for this star by now and the possible variation of its period has never been studied.

In order to determine a new ephemeris we observed this variable on three nights using the 1-m RCC telescope of Konkoly Observatory. The detector was a Wright CCD camera and V and I_C filters were applied. Comparison stars were GSC 1444-3087 and GSC 1444-1725. Reduction procedure were the same as described in Csizmadia & Sándor (2001). Minima obtained by application of the Kwee–van Woerden method (see Kwee and van Woerden, 1956) are listed in Table 1.

Table 1: Times of minima of AQ Com

Minimum light	Error	E	Type	Filter	$O - C$
JD 2451924.514	0.002	−3.5	II	V	+0.000
2451924.517	0.001	−3.5	II	I	+0.003
2451925.4982	0.0007	0	I	V	+0.0003
2451925.4972	0.0016	0	I	I	−0.0013
2451952.6480	0.0004	96.5	II	I	+0.0000

From these minima we have calculated the following ephemeris:

$$\text{Min. I} = \text{HJD } 2451925.498(5) + 0\overset{\mathrm{d}}{.}28134(23) \times E. \tag{1}$$

According to this improved ephemeris $O - C$ residuals are also listed in Table 1.
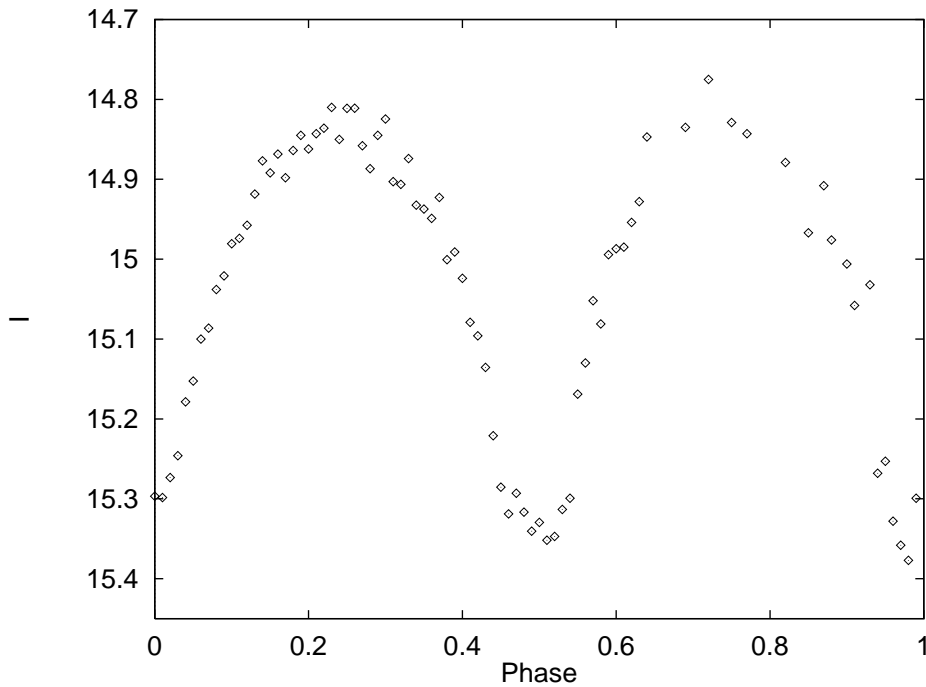
Figure 1. I_C light-curve of AQ Com

Unfortunately, because of the bad weather conditions we were unable to obtain a more precise light-curve. The averaged light-curve has a scatter of about 0.07 magnitude. I_C light-curve is plotted in Figure 1.

From observations on January 14/15, 2001 standardized magnitudes of the system at phase 0.25 were determined. For this purpose we also observed standard stars in the field of M67 open cluster (Joner and Taylor, 1990). We got that $V = 15.26$ and $V - I_C = 0.40$ at maximum light. The distance of the system can also be estimated. Rucinski (1997) gave $M_I = -4.4^{+1.3}_{-1.6} \log P + 2.3^{+0.9}_{-0.6}(V - I)_0 - 0.2^{+0.2}_{-0.3}$. The galactic latitude of AQ Com is 84°. Neglecting interstellar absorption and reddening in the direction of AQ Com we found its distance 2200^{+200}_{-300} pc and the system is above the Galactic plane with about 2190^{+200}_{-300} pc.

References:

Csizmadia Sz. & Sándor Zs., 2001, *IBVS*, No. 5045

Hoffmeister, C., 1964, *AN*, **288**, 49

Joner, M.D. & Taylor, B.J., 1990, *PASP*, **102**, 1004

Kholopov, P.N. et al., 1998, Combined General Catalogue of Variable Stars, available on
        the Internet: ftp://cdsarc.u-strasbg.fr/cats/II/214A

Kwee, K.K. & van Woerden, H., 1956, *BAN*, **12**, 327

Popova, M. & Kraicheva, Z., 1984, *Astrofiz. Issled. SAO*, **18**, 64

Rucinski, S.M., 1997, *AJ*, **113**, 407

Skiff, B.A., 1999, *IBVS*, No. 4721