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PHOTOELECTRIC OBSERVATIONS AND NEW ELEMENTS FOR KO AQUILAE

The binary system KO Aquilae has been observed at the Bucharest Observatory in 1978-1979 with a 50-cm telescope. The photometer has an unrefrigerated EMI-6256B photomultiplier. In all 769 determinations in filter B and 748 in filter V have been obtained. The mean light curve in V is represented in Fig.1 (crosses). The phases were computed using the photometric elements

Phase = (JD (hel) - 2441148.560) /2^d.86401 (1)

from (1) . In order to have the zero-phase in the middle of the primary minimum, the mean curve was shifted by subtracting 0.0075 from the phase.

An approximate solution has been obtained using a model of Horák type, the rectification of the curve outside the minima has been computed with the Fourier development having the constants

$A_o = 0.93417$

$A_1 = 0.00454$ $B_1 = -0.00549$

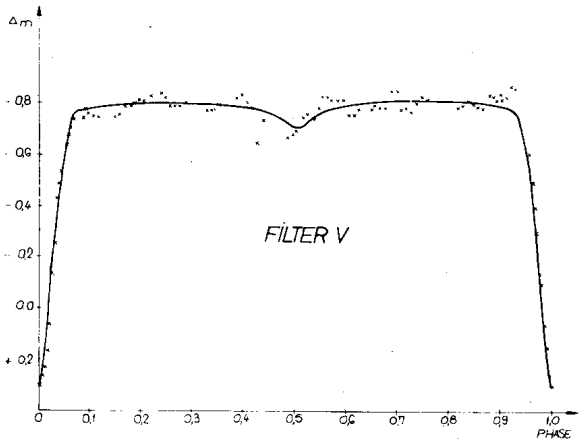
$A_2 = 0.00900$ $B_2 = -0.00947$

The limb darkening coefficients were adopted as $u_h = 0.45$ and $u_c = 0.60$. The elements are given in Table I. the solution indicates an occultation at the primary minimum, the greater but cooler star passing in front of the smaller and hotter star, both eclipses being partial.

Table I

$r_h = 0.1840$	$i^o = 86.76$
$r_c = 0.2435$	$L_h = 0.8488$
$k = 0.7556$	$L_c = 0.1512$

The elements from Table I were improved using Wood's model. The results are given in Table II and the theoretical light-curve is represented in Fig.1.



From this figure one can see a good concordance between the theoretical and observed light-curves.

Table II

Variable parameters

$i^o = 82.33$
$r_h = 0.2133$
$r_c = 0.2397$
$k = 1.1235$
$T_c(eq)^o = 5641$
$W_c = 0.041$
$q_c = 0.453$

Fixed parameters

$T_h(eq)^o = 9900$
$W_h = 0$
$\beta_h = \beta_c = 0.25$
$u_h = 0.45$
$u_h = 0.65$
$n_c = 3.5$

Auxiliary parameters

$a_h = 0.2148$
$b_h = 0.2134$
$c_h = 0.2118$
$a_c = 0.2490$
$b_c = 0.3277$
$c_c = 0.2323$
$T_h(pol)^o = 9969$
$T_c(pol)^o = 5762$
$L_h(norm) = 0.8724$
$L_c(norm) = 0.1276$
$L_h(ap) = 0.1218$
$L_c(ap) = 0.0178$

The complete solution, including observations with filter B, will be published elsewhere.

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Reference:

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