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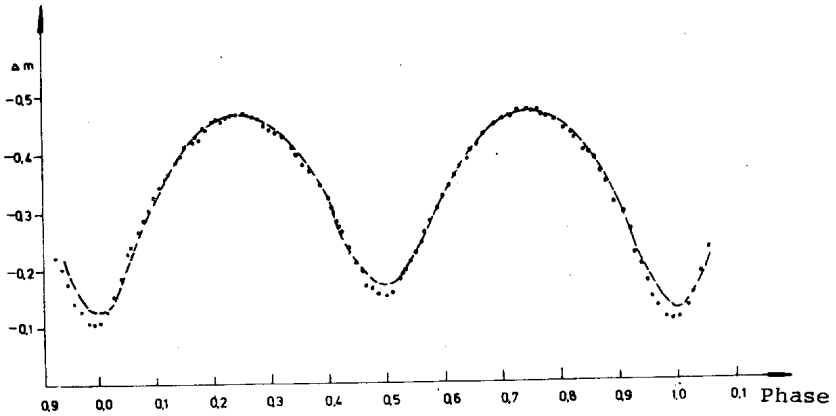
NEW ELEMENTS FOR VW CEPHEI

For the very complex eclipsing binary system VW Cephei new elements, both photometric and geometric, are obtainedusing the method by Wood (1972). Two sets of solutions are presented here: for the observations in yellow by Kwee (1966) and for the observations in 1977-78 obtained with a 50-cm telescope in Bucharest (with a V_{5500} filter).

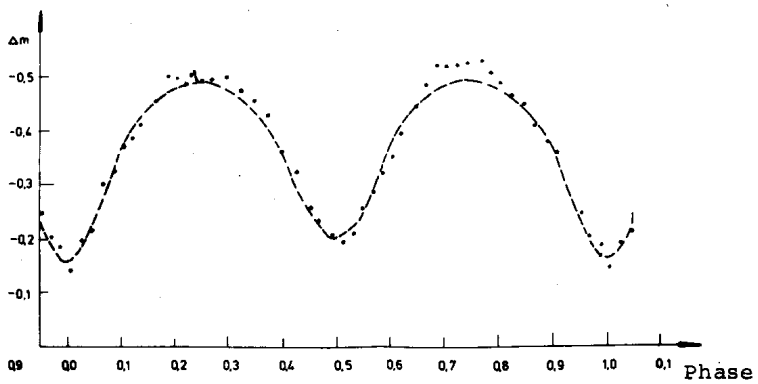
An approximate solution was obtained with a Horak type method. From various variants of models, obtained for different values of limb darkening coefficients and outer contact angle, was chosen the one with the smallest $(O-C)^2$. These elements were improved with the method by Wood, the results being given in Fig. 1 and Fig. 2 and in the Table. The limb darkening coefficients have been fixed $x_1=x_2=1$, since from all the light curves the values of these coefficients resulted greater than those



Table

	Model I	Model II	Model III
		Adjusted parameters	
i	66.6°	68.73°	69.08°
R	0.528	0.598	0.557
r	0.244	0.222	0.232
$T_2(eq)$	$4953^{\circ}K$	$4825^{\circ}K$	$4920^{\circ}K$
		Auxiliary parameters	
a_1	0.567	0.671	0.611
b_1	0.533	0.605	0.562
c_1	0.483	0.519	0.498
a_2	0.259	0.231	0.243
b_2	0.241	0.220	0.230
c_2	0.233	0.215	0.224
L_1	0.929	0.896	0.899
L_2	0.071	0.103	0.100
$1-\varepsilon_1$	0.955	0.903	0.919
$1-\varepsilon_2$	0.931	0.954	0.947
		Fixed parameters	
$T_1(eq)$	$5500^{\circ}K$	$5500^{\circ}K$	$5500^{\circ}K$
$\beta_1=\beta_2$	0.25	0.08	0.08
$q=$	0.34	0.34	0.34
$w_1=w_2$	0	0.5	0.5
$n_1=n_2$	5.0	5.0	5.0
$x_1=x_2$	1.0	1.0	1.0

corresponding to the respective spectral classes. In the same time, the mass ratio was considered constant and equal to q=0.34 though from the 1977-78 light curve it results q ~0.6. In Fig. 1 the comparison between theoretical and observed (Kwee) light curves is represented. The theoretical solution (called Model I) corresponds to a radiative atmosphere; a convective atmosphere model (Model II) was also used and the results are slightly different mainly during the secondary minimum, where this theoretical solution is above the radiative solution with about 0.01 magnitude. In Fig. 2 are represented the theoretical and observed light curves for 1977-78 period; a convective atmosphere model was used (Model III). The photometric and geometric elements for the three models are given in Table.



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