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THE NEW PHOTOELECTRIC EPHEMERIS AND  
LIGHT CURVES OF NN CEPHEI

NN Cephei was announced as RR ? in the Second Supplement to the Third Edition of the General Catalogue of Variable Stars (1974) and a Beta Lyrae type eclipsing binary by Figer and Rolland (1977).

The system was observed photoelectrically at the Ege University Observatory on 21 nights between July 1979 and October 1980. The observations were made in yellow and blue colours with the 48 cm Cassegrain telescope equipped with an unrefrigerated EMI 9781 A photomultiplier tube and Johnson's standard B, V filters. A total of 740 and 624 observational points were obtained in B and V colour, respectively. BD +61<sup>o</sup>2388 was used as comparison throughout the observing period. The nonvariability of it was checked with BD +61<sup>o</sup>2385. The extinction coefficients in separate colours for each night were calculated from the observations of comparison star using the conventional method; then, all of the differential observations were corrected for differential extinction.

Three primary and four secondary minimum given in the following table were obtained.

Times of minima of NN Cep

Hel.Min.J.D.	Filter	Min.	O-C
2444086.4796	B,V	II	-0.0003
438.4512	"	II	0.0011
474.4717	"	I	0.0013
504.3151	"	II	-0.0007
506.3741	"	II	0.0000
507.4026	"	I	-0.0007
511.5194	"	I	-0.0005

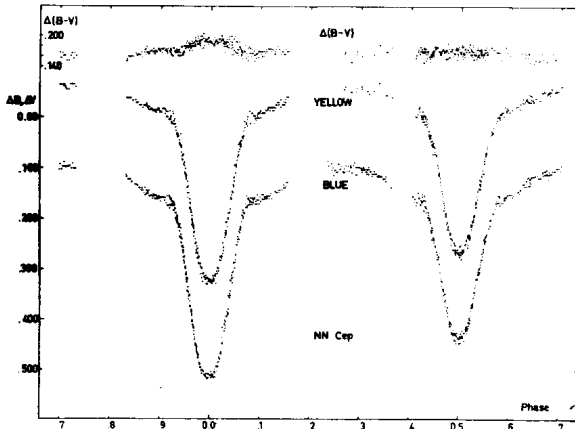
New light elements are determined using the above photoelectric

minima by the method of least squares as,

$$\text{Hel.Min.J.D.} = 2444507.4033 + 2^d.058305 \cdot E.$$

$\pm 4$                        $\pm 5$

The light and colour curves of the system are presented in the Figure where the magnitude differences between the variable and comparison stars have been plotted against the phases.



The phases in the Figure and the O-C values in the Table were calculated with the new light elements. The light curves show that the system is a  $\beta$  Lyrae type eclipsing binary. As it will be seen from the light curves there exist some complications on the shoulders of minima, particularly in B colour. The system varies about  $0^m.414$  and  $0^m.379$  at the primary,  $0^m.338$  and  $0^m.321$  at the secondary minimum in blue and yellow light, respectively. The solutions of light curves will be published elsewhere.

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Reference:

Figer, A. and Rolland, R. 1977, I.B.V.S., No. 1231