

COMMISSION 27 OF THE I. A. U.
 INFORMATION BULLETIN ON VARIABLE STARS

Number 2550

Konkoly Observatory
 Budapest
 11 July 1984
 HU ISSN 0374-0676

SPECTRAL TYPES OF ECLIPSING BINARIES IN OPTICAL COINCIDENCE
 WITH CLUSTERS AND ASSOCIATIONS

18 eclipsing binaries which have been listed by Sahade and Davila (1963) as being in optical coincidence with known clusters and associations were observed by the author utilizing the 2.1-m telescope and image-intensified White spectrograph of the Kitt Peak Observatory. 46 \AA mm^{-1} was achieved on forming gas baked IIIa-J plates in the second order blue. All plates were of good quality. The spectrum of each system was visually classified by comparison with the MK classes of known standard stars. Table I contains the

Table I
 Spectral Types

Variable	UT Date	SP. Type	Previous SP. Type	Cluster
V447 Cyg	1983 Jul 17.324	F8 Ve (comp?)	A3 + F5	NGC 6871
V586 Cyg	1982 Jun 27.406	A1 Ve	---	NGC 7039
TZ Lac	1982 Jun 28.454	F8 III (wk G)	---	NGC 7243
FP Mon	1983 Feb 2.335	F6 V (comp)	---	NGC 2353
LL Oph	1982 Jun 27.218	G5 (II/III) comp	---	Cr 302
QR Oph	1983 Jul 17.213	G8 V	---	Cr 302
V378 Oph	1983 Jul 18.244	F8 V (comp?)	---	Cr 359
V391 Oph	1983 Jul 18.260	A9 V	A1, G5	Cr 359
V441 Oph	1982 Jun 26.161	B9 III/IV	AO	Cr 302
V487 Oph	1982 Jun 28.230	F0 III	---	Cr 359
CM Per	1983 Jul 16.465	A3 V	---	Stock 2
CS Per	1983 Jul 16.481	G0 IV	---	Stock 2
HS Per	1982 Jun 29.449	AO II/III	---	Stock 4
IM Sco	1983 Jul 17.190	G2 V	---	Cr 302
V702 Sco	1983 Jul 17.240	AO Ve	B4	NGC 6383
BS Sct	1982 Jun 25.435	B7e	B5, AO III, A7	M11
FN Sct	1982 Jun 25.307	B3 Ve	---	NGC 6704
BU Ser	1983 Jul 16.309	AO V	---	IC 4756

spectral types and plate information. The previous spectral type listed is usually from the GCVS. Individual comments for some of the stars follow.

V447 Cyg: There is a single emission peak at H β , but no emission at H γ . Possibly there exist faint emissions longward of H β . The spectrum is veiled as if composite.

TZ Lac: The G-band is visible, though suppressed for the spectral type.

FP Mon: The spectrum is thought to show composite characteristics due to the weakness of the K-line and the unnatural suppression of H γ .

LL Oph: The entire spectrum is veiled, particularly towards the shorter wavelengths. The Balmer lines are quite weak and the CN break strong.

V 378 Oph: A possible composite spectrum is indicated by the inordinate width of the Balmer Lines, a slight veiling, and a possibly double H δ .

V702 Sco: There exists a single emission peak in the H β line, but no emission elsewhere.

BS Sct: There are definite double emission fringes at $\lambda 4471$ of He I, but no emission at the Balmer lines. Faint double emissions (probably of Fe II) also appear to the violet of H γ . According to Hall and Mallama (1974), there have been conflicting classifications for the primary star: F8, A7, and AO III. Their photometric observations during primary eclipse give a possible range for the primary of B5-A7. BS Sct is found to be a likely member of M11 as a consequence of its early spectral type and also a possible blue straggler.

FN Sct: There exists strong double emission at the He I lines and other possible emissions of Fe II. No emission is seen at the Balmer lines.

ELAINE M. HALBEDEL*
 Corralitos Observatory
 P.O. Box 16314
 Las Cruces, NM 88004
 U.S.A.

*Visiting Astronomer, Kitt Peak Observatory, National Optical Astronomy Observatories, operated by the Association of Universities for Research in Astronomy, Inc., which is operated under contract with the National Science Foundation.

References:

Hall, D.S. and Mallama, A.D., 1974, Acta.Astr., 24, 359
 Sahade, J. and Davila, F., 1963, Ann. d'Ap., 26, 153