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NEW VARIABLE HD 219018, THE COMPARISON STAR OF SZ Psc

Introduction

The eclipsing binary system SZ Piscium is a member of RS CVn stars. Extensive photometric and radial velocity observations of SZ Psc are published by Jakate et al. (1976).

SZ Psc was observed simultaneously photometrically (by the author) and spectroscopically (by Dorothy Fraquelli) during October and November 1978 season from the David Dunlap Observatory. The purpose of the present paper is to report the photometric variability of the usual comparison star for SZ Psc, HD 219018 (G5).

Observations

The photometric observations through V filter were obtained using 48 and 61 cm telescopes of the David Dunlap Observatory. HD 219150 (F2) was on the observing program as a check star to HD 219018. Observations of the first night JD 2443805 itself gave some indications of the variability of HD 219018. Therefore, during the subsequent nights SZ Psc was also observed independently against HD 219150.

Table 1

HD 219018 - HD 219150

JD <sub>⊙</sub>	ΔV	JD <sub>⊙</sub>	ΔV
2443800.+		2443800.+	
05.638	.478	10.554	.407
.656	.474	.589	.410
.685	.474	.606	.407
.711	.470	.632	.408
06.649	.465	.664	.404
.658	.464	13.516	.476
.666	.466	.579	.470
.686	.458	.637	.471
.713	.458	15.590	.456
10.543	.401		

Table 1 gives observations of HD 219018 against HD 219150, obtained on a total of five nights. HD 219018, the usual comparison star for SZ Psc, seems to be a variable with an overall amplitude of at least .08 mag.

Table 2

SZ Psc - HD 219018			SZ Psc - HD 219150		
JD <sub>⊙</sub>	PHASE	ΔV	JD <sub>⊙</sub>	PHASE	ΔV
2443800.+					
06.578	.706	-.436	06.650	.723	.035
645	.722	-.435	.656	.725	.033
682	.732	-.435	.664	.727	.025
.715	.740	-.438	.689	.733	.029
10.535	.703	-.357	10.540	.705	.039
.559	.709	-.364	.551	.707	.043
.595	.718	-.365	.554	.708	.040
.611	.722	-.368	.586	.716	.033
.658	.734	-.366	.601	.720	.039
.671	.737	-.367	.629	.727	.035

Since there was no second check star used, the observations of SZ Psc itself are presented as evidence towards the variability of HD 219018 and constancy of HD 219150. Table 2 gives two nights of observations of SZ Psc, as observed independently against HD 219018 and HD 219150. On both of these nights SZ Psc was going through a similar phase of outside eclipse. SZ Psc against HD 219018 gives difference of about .08 mag on these two nights whereas the observations against HD 219150 show variations less than .01 mag as expected.

Consequences of the variability of the comparison star of SZ Psc in connection with the properties of this system reported in Jakate et al. (1976) and results of the spectroscopic (Dorothy Fraquelli) and of the other photometric observations of SZ Psc will be discussed in the future paper.

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Reference :

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