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VARIABILITY OF SOME S! STARS

In IBVS No.1490, D. Hoffleit suggested that almost all the S! stars in Stephenson's (1976) "A Catalogue of S Stars" may be variable. I examined the variability of the stars on the photographs taken since then with 8cm and 10cm cameras for brighter stars, and mostly with 18cm Schmidt camera, using Tri-X film and the yellow-green filter to get visual magnitude. The names and positions of the stars are as follows, and all the stars are found to be SR type variable.

Stephenson Cat. No.	Const.	R.A. (1950)	Decl.
S 10	Cas	$0^h43^m54^s$	+63°39'.8
S123	Aur	5 56 4	+35 8.0
S139	Aur	6 11 12	+28 8.9
S223	Mon	7 18 22	- 7 42.5
S687	Cep	21 29 23	+61 20.2
S727	And	23 13 5	+50 2.5

The position of S10 is measured by the writer, identifying the star by personal communication with Dr. Stephenson. The positions of other stars are from Stephenson's (1984) Catalogue, 2nd edition.

1) S10 Cas

The star was measured on about 120 photos in only three observational years, as the star was out of the field in other seasons. The star seems to be SRb variable with the period of probably 210 days. The range is 12.3-14.2v. The light curve is shown in Figure 1.

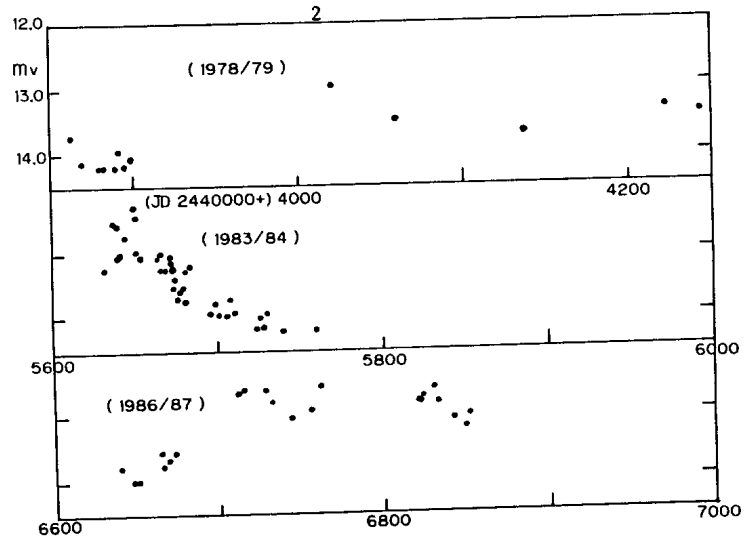

Figure 1

S10 Cas

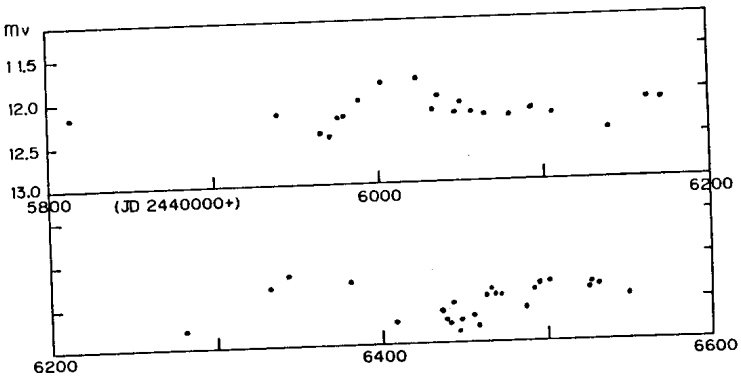

Figure 2

S123 Aur

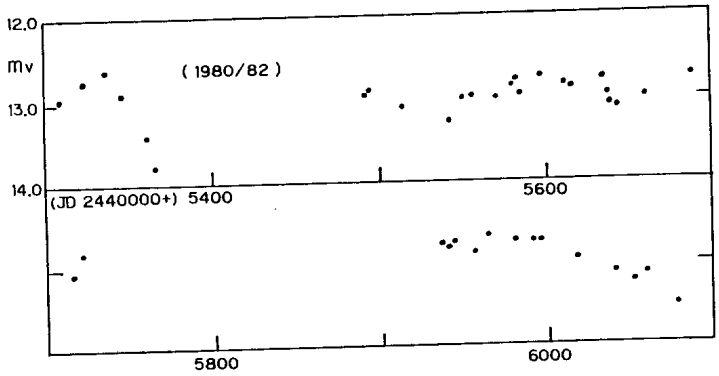

Figure 3

S139 Aur

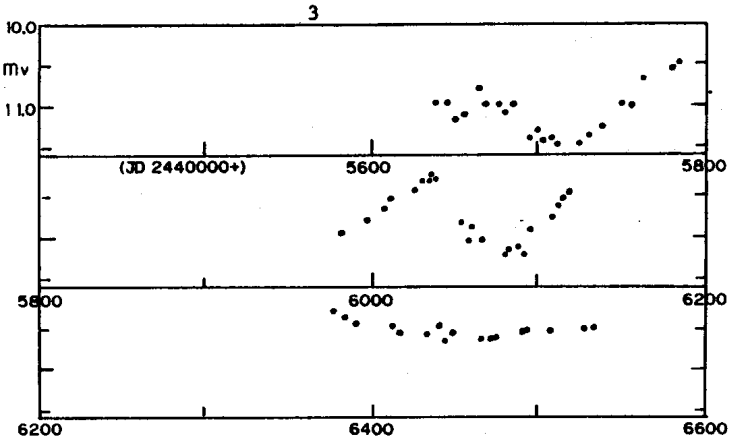

Figure 4

S223 Mon

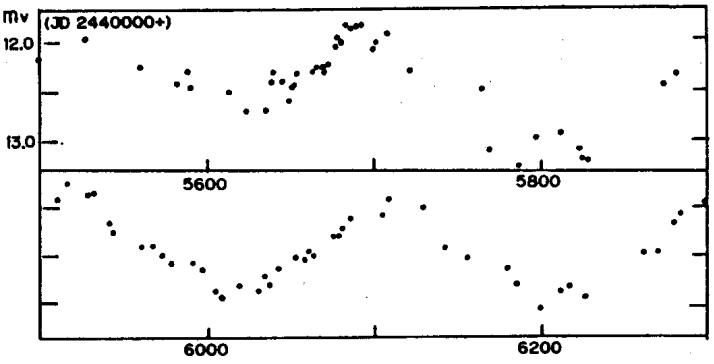

Figure 5

S687 Cep

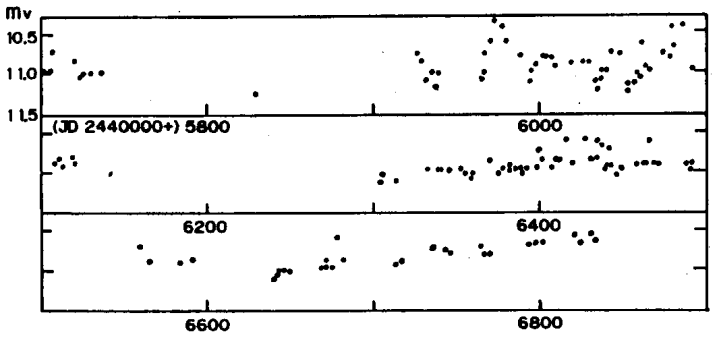

Figure 6

S727 And

2) S123 Aur

This star was measured on more than 170 photos taken in 1978-1987, and found to be possibly SRa type with the range 11.5-13.0v. The following elements are obtained:

$$\text{Max.} = \text{J.D. } 244\,3870 + 155^{d} \cdot E$$

In Figure 2, the light curve in only recent years is shown.

3) S139 Aur

This star was measured on 250 photos taken in 1979-1987, and it possibly is SRb type with the period of probably 175^{d}. The range was 12.4-13.8v so far.

4) S223 Mon

This star was measured on 130 photos taken in 1979-1987, and it is possibly SRb variable with the range 10.2-11.5v and the period of 194^{d}. The following elements are obtained:

$$\text{Max.} = \text{J.D. } 244\,4230 + 194^{d} \cdot E$$

The light curve in three observational periods are shown in Figure 4.

5) S687 Cep

This star was measured on 230 photos taken in 1979-1987. The star shows very regular variation with the period of 193^{d} and the range of 11.8-13.4v. It is SRa type and the elements obtained are as follows:

$$\text{Max.} = \text{J.D. } 244\,3975 + 193.^{d}3 \cdot E$$

In Figure 5 is shown the light curve in recent years.

6) S727 And

This star was measured on more than 370 photos taken in 1979-1987. It is rather irregular than other stars, but it would be SRb type with the period roughly from 88 to 104 days. The range was 10.4-11.3v so far. Figure 6 shows the light variation in recent years.

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References:

Stephenson, C.B., 1976, Publ. Warner and Swasey Obs. Vol.2, No.2.
Stephenson, C.B., 1984, Publ. Warner and Swasey Obs. Vol.3, No.1.