Bakos, G. A. and Heard, J. F. The eclipsing system, SZ Psc.

At the David Dunlap Observatory, 30 spectrograms and 210 two-color photoelectric observations have been made of the Algol-type eclipsing variable SZ Psc.

A new epoch of primary minimum has been established, J.D. 2436114.565. Rugemer's period of 3.96637 days satisfies our recent velocity and light observations, but no period has been found which reconciles these with our four 1939-40 velocity observations and with earlier photometric observations by others.

Two spectra are visible, making possible classification K1 IV—possibly V but not III—and F8 V and estimation of relative luminosities ($B_K \div B_F$). Bright H and K lines in the spectrum belong to the K star.

The velocity curves give

$$\begin{aligned} K_K &= 82 \text{ km/sec}, & m_K + m_F \sin^3 i &= 2.93 \odot, \\ K_F &= 110 \text{ km/sec}, & m_K/m_F &= 1.34. \\ a \sin i &= 10.5 \times 10^6 \text{ km}, \end{aligned}$$

The light curves give $B = 8.69$ and $V = 7.72$ for the primary minimum and $B = 8.10$ and $V = 7.30$ for the secondary. The average values for the maximum are $B = 8.02$ and $V = 7.22$, but there is so much scatter that intrinsic variation of one of the stars is suspected. The width of primary minimum is about 11 per cent of the period.

These data are consistent with the following description of the system:

Principal eclipse an occultation of the F-star and nearly total.

Inclination 81° .

Diameters: K1, $4.0 \odot$; F8, $1.6 \odot$.

Masses: K1, $1.7 \odot$; F8, $1.3 \odot$.

Absolute photographic magnitude of each component: $+3.6$.

While these figures must be regarded as tentative until the light curves are more complete, there is no doubt that the larger, cooler star is the more massive. Barring supergiant systems like 32 Cygni, this is contrary to the rule for all other Algol-type systems with appreciable differences in the spectral types of the components.

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Bauer, Carl A. Interpretation of responses of a meteorite detector on a rocket.

The rate of impact of particles on a surface is analyzed for several different models representing

the particle field through which the sensing surface of a particle impact detector is moving. The models are selected to show the influence of the velocity and radiant distribution of the particles and the height of the detector in the atmosphere. For these models the rate of impact of particles is a function of the orientation of the surface and its direction and velocity of motion.

The analytical methods are applied to the published observational results obtained with a light-pulse impact detector flown on a rocket by the Naval Research Laboratory (Berg and Meredith 1956).

The model with cosmic velocity particles coming from a single radiant and the model with low velocity particles lead to a predicted response rate that is strongly dependent upon the roll angle and the orientation of the rocket axis relative to the single radiant or to the direction of motion of the rocket, respectively. No such strong dependence is present in the observational results.

The model with high velocity particles coming from radiants distributed uniformly over the hemisphere above the horizon also leads to a predicted response rate that is much more strongly dependent on the roll angle and the orientation of the rocket axis relative to the vertical than is present in the observational results. In addition the peak altitude of the flight was only 103 km, which is near the region of greatest deceleration of micrometeorites. The responses were all obtained below this height and thus the response rate should have shown a strong dependence on height, but it did not.

This study indicates that the observed responses were not caused by particle impacts.

Berg, O. E. and Meredith, L. H. 1956.

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Billings, D. E. $H\alpha$ profiles and opacity of small flares.

A comparison of profiles of flares observed against different backgrounds provides information concerning their opacity. Flares seen against sunspots differ in apparent profile from those seen against the undisturbed photosphere. From this difference the author has made a purely empirical computation of flare opacity as a function of wave length.

A small flare, viewed partially on, partially off the limb, also gives information concerning flare opacity. The portions of the flare viewed against