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UBV OBSERVATIONS OF 88 HER

As reported by Harmanec et al. (1978), the Be and shell star 88 Her (B6e) disclosed the brightness decrease in 1977 by an amount of 0.2 mag. in the V band. The shell absorption feature reappeared in the dark phase. Hirata (1978) pointed out that its photometric and spectroscopic behaviors closely resemble to those of Pleione. We here report the results of our photoelectric monitoring between August 19 and December 6, 1978. The differential observations to the comparison star HD 162132 (A0) were made by one of the authors (M.N.) with the 30-cm reflector at the Tokyo Astronomical Observatory and with the 91-cm reflector at the Dodaira Station of the Observatory. Our photometry of the comparison star HD 162132 gave the following UBV values and their probable errors:

$$V = 6.503 \pm 0.004, \quad B-V = +0.097 \pm 0.003, \quad \text{and} \quad U-B = +0.112 \pm 0.004.$$

These values for HD 162132 were assumed in this study. All observations of 88 Her are presented in the Table in the form of nightly normals, together with their probable errors, and are also shown in the Figure. Since the observations were made at low altitude, the errors were somewhat larger in November and December. The mean values of our twenty-three night observations for 88 Her are

$$V = 6.847 \pm 0.005, \quad B-V = -0.089 \pm 0.005, \quad \text{and} \quad U-B = -0.368 \pm 0.006.$$

When compared with Harmanec et al. (1978), it is seen that the brightness in the V band stopped to decrease and even turned to increase. This tendency becomes more clear when we adopt the same magnitude for HD 162132 as Harmanec et al. (1978). As illustrated in the Figure, the brightness in the V band seems to increase with a rate of about 0.05 mag./100 days.

We also obtained one coude spectrogram ( $10 \text{ \AA/mm}$ ) in the blue region with the 188-cm reflector at the Okayama Astrophysical Observatory on 1978 November 14. Unfortunately this plate was underexposed. One low-dispersion spectrogram ( $70 \text{ \AA/mm}$  at H $\gamma$ ) was kindly provided by Y. Norimoto of the Tokyo Astronomical Observatory. This spectrogram was obtained on the same night with the prismatic spectrograph attached to the 91-cm reflector at the Okayama Astrophysical Observatory. Both spectrograms disclosed the existence of the shell lines of hydrogen and metals, and the general appearance of the spectra closely resembles to that in 1978 August (Hirata 1978).

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| Date               | (UT)               | JD -<br>2443000 | V         | B-V        | U-B        | n*         |
|--------------------|--------------------|-----------------|-----------|------------|------------|------------|
| 1978 August        | 19.53              | 740.03          | 6.85±0.00 | -0.07±0.00 | -0.39±0.01 | 6          |
|                    | 20.54              | 741.04          | 6.90±0.00 | -0.10±0.00 | -0.36±0.01 | 4          |
|                    | 21.54              | 742.04          | 6.90±0.01 | -0.07±0.00 | -0.41±0.01 | 3          |
|                    | 22.58              | 743.08          | 6.86±0.00 | -0.09±0.01 | -0.39±0.00 | 3          |
|                    | 23.63              | 744.13          | 6.88±0.01 | -0.10±0.02 | -0.35±0.02 | 3          |
|                    | 28.63              | 749.13          | 6.88±0.01 | -0.09±0.01 | -0.28±0.03 | 3          |
| September          | 9.48               | 760.98          | 6.87±0.01 | -0.12±0.01 | -0.36±0.00 | 3          |
| October            | 1.47               | 782.97          | 6.88±0.01 | -0.10±0.01 | -0.33±0.01 | 3          |
|                    | 2.50               | 784.00          | 6.84±0.00 | -0.04±0.05 | -0.38±0.01 | 3          |
|                    | 17.48              | 798.98          | 6.86±0.00 | -0.09±0.01 | -0.34±0.00 | 3          |
|                    | 21.52              | 803.02          | 6.78±0.02 | -0.06±0.03 | -0.32±0.03 | 3          |
|                    | 24.46 <sup>†</sup> | 805.94          | 6.84±0.01 | -0.04±0.01 | -0.38±0.02 | 3          |
|                    | November           | 3.43            | 815.93    | 6.85±0.00  | -0.10±0.00 | -0.41±0.00 |
| 4.42               |                    | 816.92          | 6.86±0.00 | -0.12±0.00 | -0.33±0.01 | 3          |
| 6.44               |                    | 818.94          | 6.86±0.01 | -0.06±0.01 | -0.41±0.01 | 3          |
| 8.39               |                    | 820.89          | 6.83±0.02 | -0.09±0.01 | -0.40±0.02 | 4          |
| 9.41               |                    | 821.91          | 6.88±0.01 | -0.14±0.00 | -0.46±0.04 | 3          |
| 16.42 <sup>†</sup> |                    | 828.92          | 6.74±0.05 | -0.06±0.01 | -0.40±0.01 | 2          |
| 20.39              |                    | 832.89          | 6.81±0.01 | -0.06±0.00 | -0.35±0.01 | 3          |
| 22.39              |                    | 834.89          | 6.84±0.02 | -0.07±0.02 | -0.38±0.03 | 3          |
| 24.41              |                    | 836.91          | 6.83±0.02 | -0.11±0.01 | -0.38±0.03 | 3          |
| 28.40              |                    | 840.90          | 6.84±0.02 | -0.20±0.01 | -0.29±0.01 | 3          |
| December           | 6.37               | 848.87          | 6.85±0.01 | -0.08±0.01 | -0.38±0.02 | 3          |

\* n denotes the number of measurements.

† Observed at the Dodaira Station, the others were observed at the Tokyo Astronomical Observatory.

