A PROGRAM OF NEW ACCURATE PHOTOMETRY FOR BRIGHT STARS

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ABSTRACT. A new program of accurate photoelectric photometry for the brightest stars is getting underway, using the excellent small telescopes and talents of amateur astronomers.

The extensive use of new detectors and pulse counting electronics has produced an interesting fact that accurate photometric data on well-known standard systems is lacking for the brightest stars. The incoming flux from these stars overloads existing instrumentation for even relatively small telescopes. Yet these stars are often the ones for which the best astrophysical information is known, such as chemical abundances, rotation, surface magnetic fields, and so forth. It is important that very accurate photometric data should exist on all the standard photometric systems for these stars, so that the brightest stars with this detailed astrophysical information can be well linked to fainter stars via intermediate and wide-band photometry.

A number of amateur astronomers with first-class observing facilities and I have begun a program to correct this deficiency. We expect, over the next few years, to produce new, accurate, and homogeneous data for the brightest stars ($V < 5$ mag or so) on several of the most used photometric systems. Observing has begun at Braeside Observatory in Flagstaff, AZ, by Bob Fried, with its telescope diaphragmed down to approximately 3-inch aperture for some of the work. A second telescope (APTS at Mt. Hopkins) will begin operation, part time, on this program early in 1986. Others are welcome, but the quality of the telescope and photometer must be excellent, and the data reduction of the highest quality, with techniques and coordination adequate to guarantee homogeneous data.

The main goal is to have extensive data for these important and well known stars tied into the existing data for fainter stars on the same systems. Very useful by-products will be the long-term monitoring of these stars for variability, and analysis of the stability of the photometric systems and the sites in use.

J. B. Hearnshaw and P. L. Cottrell (eds.), Instrumentation and Research Programmes for Small Telescopes, 241–242.

DISCUSSION

Kurtz: I don't believe that using small apertures and neutral density filters are equivalent because of scintillation problems.

Crawford: I agree, and that's why we do both.

Gray: Will you rotate your aperture plate when it is used so as to sample a range of your optics, and thereby make the small aperture measurements more compatible with your full 16 inch aperture ones?

Crawford: I think not. On occasions we will run tests with the aperture plate in different positions.

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