

## A DESCRIPTION OF A CATALOGUE OF BRIGHT uvby $\beta$ STANDARD STARS

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**ABSTRACT.** A description is given of an all-sky catalogue of bright standard stars for the uvby $\beta$  photometric systems.

During the planning stage of a long-term photometric investigation of the spatial distribution of interstellar reddening in the southern hemisphere, one of us (CLP) has composed an all-sky master list of bright uvby $\beta$  standard stars for use with small telescopes. The list was compiled from uvby and/or beta photometric survey papers of bright stars published by various Copenhagen and Tucson observers during the past 25 years. Galactic cluster papers were excluded. The only criterion for inclusion in the master list was that each star have a minimum of ten uvby and/or beta observations in a given reference. The photometric references were then searched for all uvby and/or beta observations for the stars in the list. Weighted uvby and beta averages were determined for each star; these data became the basis of the present catalogue. The final catalogue tabulates, in succession, the HR numbers, the 2000-year coordinates, and the spectral types (from the Bright Star Catalogue (Hoffleit and Jaschek, 1982)); the visual magnitudes (to be discussed below); and the uvby and beta indices. The total number of observations and the sources of the data are listed with each type of photometry.

The situation is not so simple for the visual magnitudes. When available, the visual magnitudes were taken from the intermediate-band references, but no minimum was imposed on the number of observations. These visual magnitudes were derived from observations made with the intermediate-band  $y$  filter transformed to the UB $V$  system. For the remaining stars, visual magnitudes were assigned from the wide-band photometric references. Because the half-width of the  $y$  filter of the uvby system differs from that of the  $V$  filter of the UB $V$  system, the visual magnitudes derived from the uvby photometry may deviate slightly from those derived from UB $V$  photometry. The visual

magnitudes for many catalogue stars are not firmly established due to: (a) the half-width differences in the intermediate- and wide-band photometric systems, and (b) the lack of a sufficiently large number of observations per star. Clearly, more data are required even for naked-eye stars. Crawford will present a paper at this symposium which proposes a solution to this problem.

The stars in the master list were checked against the Index Catalogue of Visual Double Stars (Jeffers and van den Bos). Those standard stars which are members of visual binary systems are listed in a separate table which tabulates all components within 10 arc-sec of a given primary. A check was also made on the external consistency of the photometric references. Mean values of the photometric indices were determined for the stars in the "standard" references. Next, the residuals in the indices were found for all stars common to a given reference and the "standard" references. For all indices, the mean difference and its mean error (one star) between a given reference and the "standard" references indicate that no significant deviations exist between the different references. Finally, stars noted in the references as being photometrically variable are indicated as such in the catalogue. Additional remarks concerning the duplicity, variability and other peculiarities of individual stars may be found in the Bright Star Catalogue. There exists quite a good distribution of stars of different spectral types over the sky, both north and south.

In conclusion, a comprehensive catalogue of bright standard stars for uvby $\beta$  photometries is now available for observers using small telescopes. The catalogue data and references will be published in the near future. Additional standard stars of later spectral types would be desirable, as Olsen (1984) has extended the uvby calibrations into the G and K spectral range. Lastly, the authors wish to thank the many observers whose efforts contributed to this catalogue.