

PHOTOMETRIC RESEARCH WITH A SMALL TELESCOPE (BAMBERG 37-cm.
REFRACTOR) AT BOSSCHA OBSERVATORY, INDONESIA

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In 1979 Partoharsodjo (see Kitamura et. al., 1985) constructed a new photoelectric photometer with an RCA IP21 photomultiplier, so that it : 1) can be coupled easily with the Bamberg 37-cm. refractor at the Bosscha Observatory, and 2) can be used both for direct current and photon counting modes. Since its installation at the telescope in the early 80's, photometric work at Bosscha Observatory was resumed.

In view of meteorological and telescope conditions, and optical limitations, we put emphasis on the observations of bright variable stars ($m \leq 9$) south of declination $+17^\circ$. In this programme differential, rather than absolute, photometry can be applied. For variable star research we have selected eclipsing binaries with periods of around 24 hours whose light curve are not yet well determined or not well understood.

Photometric activities since 1981 include:

1. Observations of eclipsing binaries
Eight pairs (DV Aqr, δ Cap, DX Aqr, Y Aql, EE Peg, ζ Phe, 35 UU Psc, and V 822 Aql) are on our current observing programmes. DV Aqr has been studied in 1983. Analysis of its light curve using the synthesis method developed by Yamasaki (1981) lead us to conclude that this object is a short period non-contact close binary system (Okazaki et. al., 1985). In 1985, the light curve of δ Cap was completed at Bosscha Observatory and part of it had been obtained at Okayama Observatory (Yamasaki, 1985, private communication). A preliminary study shows that this system thus belongs to a few of such systems of binary stars. Observations of the other six pairs are being continued.
2. Atmospheric extinction study
In order to obtain the extinction coefficients, UBV standard stars (kindly prepared by Nishimura, 1981) were used, both in absolute photometry and differential photometry. The coefficients of extinction (k_v and k_b) were derived from observations of these stars at various zenith distances. As a side study, we found high values of the annual average of k_v and k_b for the year 1982. This is attributed to fine dust originating from the eruption of Mt.

Galunggung and floating in the stratosphere (Malasan et. a., 1984; Hidayat and Malasan, 1985).

3. Be stars photometry

This work has just started both at Bosscha and Okayama Observatories (Dawanas et. al., 1985).

For the future, observations of variables with periods of around 24 hours, occultation of stars by planets, the moon or satellites, bright flare stars and comet heads may be best carried out in coordination with several observatories located along a considerable length of geographic longitude. This coordinating work would ensure better time and spatial resolutions, and thus higher precision. As for Indonesia, a plan for a 60-cm. reflector for modern astronomical photometry is underway.

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