DSLR Photometry of the Eclipsing Binary u. Her

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Using a DSLR camera and an 5-inch telescope, we developed a low cost photometric system. The system is located in Seongnam-si, Korea, and it was in operation for four months. Using the system, we achieved photometric data of the eclipsing binary 68 u. Her. To get highly precise data out of Bayer filters, we defocused the telescope heavily, FWHM ranging from 30 to 40 pixels. Additional spectroscopic observation was conducted with the NOAO/DOAO 1m Telescope for three months. The light curve and the radial velocity curve is presented in the paper. The light curve at phase 0.05 ~ 0.15 shows different characteristics in comparison to those of prior studies. A mass ratio of 0.41 was derived from the radial velocity curve. Using the mass ratio of 0.41, we could find the best fit of the theoretical light curve and determined the solution of the elements of the binary system. Our system's photometric data achieved a standard deviation of 52 mmag in red color when the sky conditions were good. We concluded that this result is enough to be used in analyzing pulsating variable as well as eclipsing binaries, or even Hot Jupiters

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