New V & Rc light curves and the derived absolute parameters are presented for the overcontact systems DZ Psc and V842 Her. These systems were selected for photometric study because the existing radial velocity solutions (Rucinski et al. 1999, 2003) necessitate precision light curves to complete the description of their absolute geometric and orbital parameters. Data were obtained using the 41-cm telescope at the Eastern University Observatory equipped with an SBIG ST-10XME CCD.

V842 Her (P=0.41851 d) is a W-type contact binary with two previously published light curves. The light curves exhibit a total primary eclipse and slight asymmetries in the maxima due to the presence of cool spots. A light curve solution has been previously published but no solutions existed that incorporated the mass ratio information from the recent radial velocity data of Rucinski & Lu (1999). V & Rc observations of V842 Her were obtained on 7 nights from 13 March 2004 to 8 June 2004 resulting in approximately 1100 data points in each bandpass. These were binned into 200 equidistant normal points in flux units and analyzed using Binary Maker 3 (Bradstreet & Steelman 2002) and Wilson-Devinney (1971, 1979, 1992). A cool spot was placed on the more massive star to compensate for the small asymmetry in the maxima of the light curves near phase 0.75. The differential corrections solution is shown below along with the absolute parameters of the stars. Our results confirm those of Torres & Melendez (1996) except that we modeled the system with a cool spot and they used a hot spot. However, the essential parameters (mass ratio, fillout, inclinations, etc.) are nearly identical. Analysis of the O-C diagram for V842 Her clearly indicates that it is increasing its period at the significant rate of +7.280 x 10^-7 sec/yr. Cozmadina (2001) suggested that the period of V842 Her was constant, although he mentions the possibility of a slight period increase. Our analysis of all the existing times of minimum light shows a definite increase in period.

DZ Psc (NSV 223, P=0.56613 d) is a low mass ratio, high fillout A-type contact binary with two previously published light curves. We confirm the totality of the secondary eclipse. We also find the light curve has changed between the 2003 and 2004 observing seasons; the depth of secondary eclipse has increased by nearly 0.04 mag in Rc. DZ Psc was observed during the late fall of 2003 and again in the early fall of 2004. The 2004 observations consisted of five nights from 3 October to 12 October 2004 and resulted in 945 observations in V and 919 observations in Rc. These data were binned into 200 normal flux points in each bandpass and analyzed in the same manner as V842 Her. The results of these analyses are presented below. Subsequent to this work Niarchos & Gazeas (2004) published their own analyses of DZ Psc (NSV 223; P=0.56613 d) resulting in 945 observations in the same manner as V842 Her. The results of these analyses are presented below. Subsequent to this work Niarchos & Gazeas (2004) published their own analyses

New Precision CCD Light Curves, Analyses, and Absolute Parameters for the Overcontact Binaries
V842 Her and DZ Psc

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