

**Period Variation and Spot model for W UMa Type Binary TY UMa**  
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We present *VRI* full light curves and times of minima of TY UMa to provide a complete photometric solution and a long term trend of period variation. The light curves show a high degree of asymmetry (O'Connell effect). The maxima at 0.<sup>p</sup>25 (Max I) are 0.<sup>m</sup>023, 0.<sup>m</sup>018, and 0.<sup>m</sup>012 fainter than those at 0.<sup>p</sup>75 (Max II) in *V*, *R*, and *I*, respectively. The period of TY UMa have varied in a sinusoidal way, superposed on the long-term upward parabolic variation. The secularly increasing rate of the period is deduced as 1.94 second per century  $P(\dot{P})/P = 6.<sup>d</sup>132 \times 10^{-10}d^{-1}$ . The period of sinusoidal variation is about 44.5 years. The spot model has been applied to fit the asymmetric light curves of TY UMa to explain light variations. Changing only spot parameters, the model light curves could fit to the observed light curves for three epochs. This indicates that the variation of the spot location and size is the main reason for changing the shape of light curves, including two different maxima and the interchanging depths of occultation and transit minima.