Detection of Stellar Spots from the Observations of Caustic-Crossing Binary-Lens Gravitational Microlensing Events

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Recently, Heyrovský & Sasselov (1999) investigated the sensitivity of single-lens gravitational microlensing event light curves to small spots and found that during source transit events spots can cause deviations in amplification larger than 2%, and thus be detectable. In this paper, we explore the feasibility of spot detection from the observations of caustic-crossing binary-lens microlensing events instead of single-lens events. For this we investigate the sensitivity of binary-lens event light curves to spots and compare it to that of single-lens events. From this investigation, we find that during caustic crossings the fractional amplification deviations of microlensing light curves from those of spotless source events are equivalent to the deviations of single-lens events, implying that spots can also be detected with a similar photometric precision to that required for spot detection by observing single-lens events. We discuss the relative advantages of observing caustic-crossing binary-lens events over the observations of single-lens events in detecting stellar spots.