

# **Astrometric Properties of Gravitational Binary-Microlens Events and Their Applications**

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In this paper, we study the astrometric properties of gravitational microlensing events caused by binary lenses. By investigating the centroid shifts for various types of binary-lens events, we find that the deviations of the centroid shift trajectories from the elliptical ones of single-lens events are characterized by distortions, twistings, and big jumps. We study the conditions of binary-lens system configurations and source star trajectories for individual types of deviations. We find dramatic differences in the astrometric centroid shifts for binary-lens microlensing events that would be degenerate had their parameters been determined photometrically. Therefore, when additional astrometric observations of a binary-lens event are available, one can resolve the ambiguity of the binary-lens fit, and uniquely determine the binary-lens parameters.