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Sougata Dhar and **Jessica Stewart Kelly***, jessica.kelly@cnu.edu, and **Arlie Petters**. *A Refinement for the Upper Bound on the Number of Cusps in the Case of Single-Plane Microlensing.*

For a single-plane lensing map η with deflection potential Ψ , which maps an observation position in the lensing plane to the source plane, the set of observation points (set of x -values) from the lensing plane for which $\det[\text{Jac}\eta](x) = 0$ have infinite magnification and form a critical curve. Corresponding to the critical curve are the light source locations in the source plane; this set is the caustic set. While critical curves are smooth, the associated caustic curves contain folds and cusps. Several special features—beak-to-beak, elliptic umbilic, and swallowtail metamorphoses—can appear in the caustic curve. For the case of beak-to-beak and elliptic umbilic metamorphoses, an upper bound has been established for the maximum number of occurrences. It remains to improve the estimate for the maximum number of cusps and hence swallowtail metamorphoses in the case of single-plane microlensing. In this talk, we will discuss an application of the resultant theorem and how its use improves this upper bound estimate on the number of cusps. (Received September 24, 2018)