

Dear SGP Reviewers:

Some of the content of this SGP submission “Focal Surfaces of Discrete Geometry” (Paper 129) was submitted to SIGGRAPH this year. However, the SIGGRAPH paper submission consisted of three parts: a discussion of focal-surface-based discrete differential geometry, the use of focal meshes in surface subdivision, and using focal meshes to render reflective and specular surfaces. Several of the SIGGRAPH reviewers suggested that we break down the paper into separate parts and resubmit them as individual papers. This SGP submission focuses on focal-surface-based discrete differential geometry. We have addressed many comments from the reviewers and included more results. In particular, we have shown how noisy vertices and normals affect the quality of our estimation. We are offering as supplemental material our SIGGRAPH reviews to aid in the SGP reviewing process.

The Supplementary Materials of our SGP submission include:

- A. 1) A proof on focal surface properties. 2) A proof on the relationship between the focal surfaces and two-slit structures. 3) The derivation of the angular metric for estimating the focal surfaces of discrete meshes.
- B. High resolution images that compare Meyer’s method with ours on estimating the principal curvatures on the Gargoyle model.
- C. High resolution images that compare Cohen-Steiner’s method with ours on estimating principal directions on the David Head model.
- D. Our SIGGRAPH reviews.