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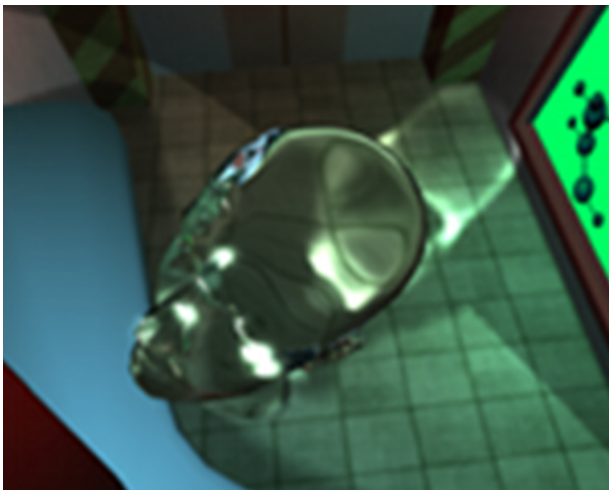
E- 08028- Barcelona

Caustic Triangles on the GPU

Tamas Umenhoffer; Patow, Gustavo A.; Laszlo Szirmay-Kalos



This paper proposes a robust algorithm to compute caustics caused by multiple reflections and refractions on the GPU. The proposed algorithm solves two problems of previous methods, caustic light leaks and caustic undersampling. In order to eliminate caustic light leaks, terminal photon hits are stored and caustic patterns are reconstructed on the faces of a layered distance map attached to the caustic generator. To avoid undersampling, we propose caustic triangles to be drawn instead of splatting photon hits. Unlike splatting, caustic triangles adapt to the local density of the uneven photon distribution, always form continuous patterns, do not cause excessive blurring, and do not require manual user intervention to set the size of these splats.

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