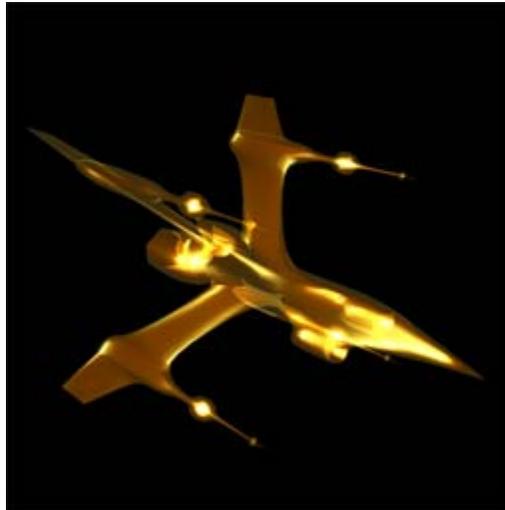




Technical Report

Membrane



DEVELOPMENT

Membrane

A simple Direct3D vertex shader 1.1 is used to render a transparent membrane effect. Thin membranes are more visible when viewed edge-on, and they appear transparent when viewed perpendicular to their surface. To give this effect, the vertex shader computes the dot product between the vertex normal and the direction from the vertex to the viewer. The absolute value of the dot product is used as a texture coordinate to access a 1D color ramp texture. This texture maps the angle to whatever colors you like, and it can be derived mathematically or simply painted with a color gradient. The color ramp texture is shown in the lower left corner of the demo, and you can cycle through various ramps by hitting the space bar.

Additive alpha blending is used to sum the light contribution from all surfaces of the model. This does not require sorting the triangles by depth.

Since the color ramp can contain arbitrary colors, a variety of transparent and opaque material effects are possible using the same shader programs. If you were to compute the angle from a light instead of the view position, you could encode various light functions into the ramp texture, including specular highlights and anisotropic reflection effects.



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