

Ian Waters  
April 2009

## Fast soft shadows.

The new soft shadow technique uses the GI Sampling Engine to interpolate (blur) between shadow samples (rays). Since it is using the GI Engine, you will need to turn on "Enable Global Illumination" in the Global Illumination window and "Use GI Sampling Engine" in the Shadow tab of the Light Info window.

Load the project and render, it takes about 4 seconds to render (iMac 2.66). All renders shown here are with Anti-Aliasing disabled. Setting Anti-Aliasing to Adaptive may add a second or two to the rendering time.

### Quality control of Fast Soft Shadows:

#### Primary GI rays (in GI window):

Should be 100 or above, I recommend 200. This number is used to calculate the interpolation, and is not the number of shadow rays cast. If you don't understand what that means, fear not, just keep it above 100.

#### Color Tolerance (in GI Window):

Should be ABOVE 1 (2, 3 or 4 are all good starting points). This number is used to calculate interpolation, higher numbers will remove 'artefacts'.



Color Tolerance = 1



Color Tolerance = 4

#### Optimize slider (in Light > Shadow > Shadow options):

Simple scenes: 0 to 1

Detailed scenes (tight meshes): 0 to 0.5

This option ALSO works with non GI shadows.

#### Samples (in Light > Shadow > Soft edge > Samples):

This is a VERY important setting, this is the number of shadows rays that will be cast. I recommend a starting point of 6 samples, moving up to a high of 12.

The calculation (look away now) is: Shadow rays = samples \* samples \* 3.14 / 4



Samples = 12



Samples = 4

--

**Things to try:**

Set Color Tolerance to 1 in GI settings and notice the artifacts.

Set samples in Shadow > Soft edge > Samples > to 4 and notice that noise starts to appear.

Disable 'Use GI Sampling Engine' and put the Optimize slider to 0.0, and compare times with the old, EIAS 7 and below, shadow method (15 seconds here).

--

**Important note:**

When your camera is very close to a flat ground plane you WILL get gaps in your shadows:



Simply change your GI Sampling area to 4x4 (or 2x2) and these gaps will disappear. Note that this will slow the render (but not by that much).

