

# MicroSplat

## Tessellation and Parallax



## Overview

The Tessellation and Parallax module adds support for Tessellation and Parallax Offset mapping, which can greatly enhance the depth effect of a given scene.

## Requirements

Tessellation requires shader model 4.6, which means that it works on Windows machines running DX11 or Vulkan, OSX machines running OpenGL, most consoles, and some

high end mobile phones.

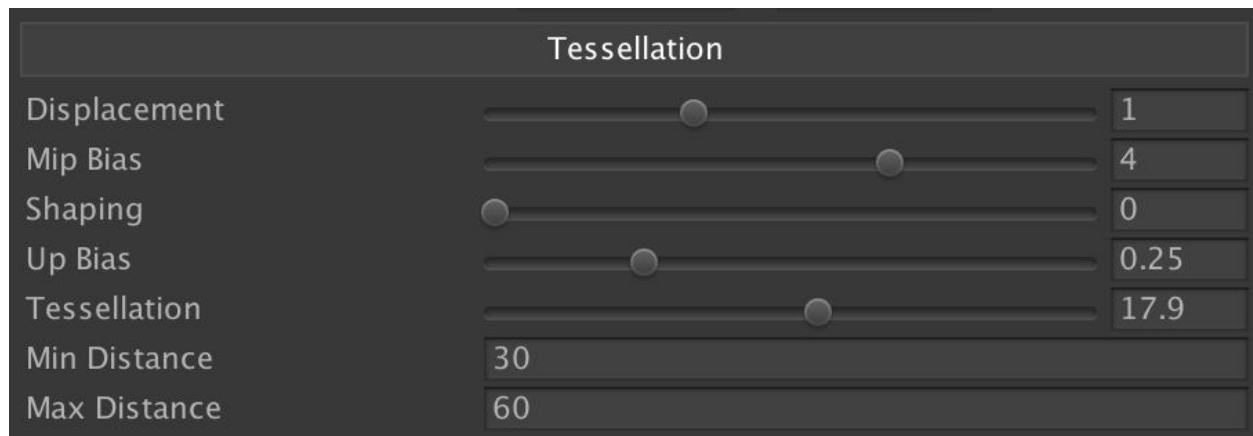
Note that as of Unity 5.6, Unity defaults builds in OSX to use Metal, which does not support tessellation in Unity. You can turn off “Auto Graphics API” for OSX in the player settings and use “OpenGL Core” instead to enable tessellation on OSX builds.

## Shader Features



The Tesselation and Parallax options will turn on/off the features. Parallax Offset is a simple technique which adds a greater sense of depth to the surface without actually displacing the geometry, whereas tessellation subdivides and displaces the geometry. The two techniques can be used independently or combined.

## Shader Parameters



The main shader parameters available for tessellation are described below:

- Displacement
  - How far from the original surface should displacement push the vertices?
- Mip Bias
  - How much should we favor a lower mip map in sampling the textures? Higher values generally make performance better and make the displacement smoother.
- Shaping
  - Shaping is a second interpolation contrast used just for Tessellation. Low values will create wide transitions between textures, which tends to look better than sharp transitions.
- Up Bias
  - When Up Bias is set to 0, the displacement happens in the direction of the normal. When Up Bias is set to 1, the displacement happens straight up.
- Tessellation
  - How much to subdivide the triangles. Higher tessellation values look better, but are more expensive
- Min Distance
  - Distance at which to start tessellating and displacing geometry.
- Max Distance
  - Distance at which tessellation and displacement of geometry ends.

## Parallax Options

Parallax has but one option, Parallax Height, which controls how much of the effect is applied. If parallax height is too large, the effect may break and look as if the texture is being smeared along the edge of the object.

## Tips and Tricks

1. The quality of these effects is directly proportional to the quality of your height maps. It is thus recommended to supply actual height maps using the PBR mode of the Texture Packer rather than relying on automatically generated ones.
2. The combination of Parallax and Tessellation can be very powerful. With Parallax enabled, you can often use less tessellation and less displacement, but get a similar depth effect on your textures.
3. Per Texture controls are available for several tessellation options. When the “Tess Offset” Per Texture property is enabled, buttons will appear that will allow you to automatically compute the proper offset based on the texture data, allowing the tessellated terrain to stay as close to the original collider as possible.