**Pulsing Materials & Flashing Materials**

**Don’t share rapid pulses online or in your games without a proper epilepsy warning or options to turn it off.**

**Pulsing Materials**

In the content browser create a material. We are going to make the pulsing using a sine wave. Open the material BP and add a sine node. If we preview this we will get an error as the sine node needs a time pin. Add a time node and hook its output exec pin to the input pin of the time node. But then in the preview we see flashing and we can’t control the rate of the flash yet. To do that we need a new factor – frequency. Add a scalar parameter node and name it as Frequency. Extend its output exec pin and add a multiply node. To decrease the frequency, try decimal values. To the other pin add the time node and hook the output pin to the input pin of the sine node. Now, by tweaking the frequency value you can control the rate of the pulse.

Extend the output exec pin of the sine node and add another multiply node and to the other pin add a 3-vector parameter node and name it color and set it to the desired color. Extend the output exec pin of the multiply node and add another multiply node and to the other pin add a scalar parameter and name it to intensity and set it to say 1. Hook the output exec pin of this multiply node to the emissive pin of the material node.

If you want to give other objects the same material but with tweaked values. In the content browser right click on the material BP and select the create material instance option and a material instance is created. Just check the options you want to tweak and then change their values and then apply them to the object while you use the original material for other objects.

**Flashing Materials**

What if you just want flashes and not pulsing materials? To do that create a material BP and in it add a sine node. Add a time node and extend it and add a multiply node. Extend the other pin of the multiply node and add a scalar parameter and name it to frequency. Hook the output exec pin of the multiply node to the input exec pin of the sine node. Add an if node. Extend the A pin of the if node and add a constant node and set the constant’s value to 0. Hook the output exec pin of the sine node and hook it to the B pin. Extend the output exec pin of the sine node and add a floor node and hook it to the A>B pin. Extend the output exec pin of the sine node and add a ceil node and hook it to the A<B pin. Extend the output exec pin of the if node and add a multiply node. Extend the other pin of the multiply node and add a 3-vector and name it color and select the color you want. Extend the output exec pin of the multiply node and add another multiply node and extend the other pin and add a scalar parameter node and name it to Intensity. Extend the output exec pin of the multiply node and hook it to the emission pin of the material.

So, if the value of sine is between 0-0.5 the value is floored to 0 else if it’s between 0.5-1 then the value is ceiled to 1. So, we just get flashing rather than pulsating effect.

**Candle light effect**

Instead of flooring and ceil-ing the value, you can just add a fix number when sin value is like 0.6 or smaller and plugin sin to the "greater than" branch of the if. This way the emission strength will not go down to 0, just pulsates between 0.6 and 1. This can create a candlelight-like effect behind a window for example.

