Hypervoxels, Planet Rings, and You!

A Tutorial by David Clish
Attempt to create a realistic looking planet ring.
Before you start, note:

- All my numbers will be in feet / inches.
- My object sizes will be abnormally large because planets are abnormally large floating objects.
- Your numbers may vary as long as the scales stay relative to each other.
Phase: 1 – Creating the planet

- Start by creating a new scene in Modeler.
- Create a ball on the first layer at the coordinates of 0,0,0 (I chose a radius of 7000 feet).
- You can texture your planet later, for right now I left it grey for faster rendering (But make sure that smoothing is turned on).
Phase: 2.1 – Entering the values for “Spray Points”

- Go to layer 2 and place the planet in the background (we need to see it so we know how large to make the ring).

- To create Hypervoxel asteroids, we first need to create the individual points for each asteroid on the ring.

- This is fairly simple to do by using the “Spray Points” tool in the create tab.

- Before clicking anywhere else, click “n” and enter the values for the rate and radius (if your following my dimensions: Rate = 12, Radius = 2000).
Phase: 2.2 – Generating the points for the ring.

- Click and hold to create a ring of points around the planet.
- Remember, the slower you move the mouse, the more points are created.
- I ended up with around 4000 points. This sounds like a lot, but we'll be cutting it down.
Phase: 2.3 – Cleaning up the ring

- On a different layer, copy and paste the points from the first ring.

- Only this time, rotate the points a few degrees to give the ring a varied look.

- Merge the two rings onto one layer and remove straggling points to keep the ring a round shape.

- Finally, remove a chunk of the upper and lower levels, this way there aren’t too many points.
Phase: 2.4 – Flattening the points

- Select all the points on the ring and go to the Detail tab > Points > Set Value.

- We want to flatten the ring so make sure you select the Y axis and enter 0 for the value.
Phase: 3 – Layout and VIPER

- Make sure you have your planet on one layer and all your ring points on a second layer.

- Then save the file and open it in Layout.

- To make it easy to see what is happening to our points without having to continually render, we can use VIPER.

- VIPER does a rough render of our Hypervoxels so we can see our changes.
Phase: 4.1 – Points to Hypervoxels

- To open the Hypervoxels option box, go to the Scene tab > Effects > Volumetrics.

- In the Add Volumetric dropdown box choose Hypervoxels, and double-click on Hypervoxels 3.0.
Phase: 4.2 – Entering the Hypervoxel options

- Your first going to need to turn the Hypervoxels on for the rings layer. Do this by selecting the layer that your rings are located on and click the Activate button.
- Right now your asteroids look more like asterblobs, so let's make them smaller and give them some varied sizes.
- I entered 60ft for the particle size and 250% for the Size Variation.
In order to get a better look at our individual particles in VIPER, change the Preview Options to **Particle View**.

If you decide you want to get a cleaner view of what they will look like fully rendered, you can turn off **Draft Mode** in the bottom left corner of VIPER. It takes a little longer to render, but looks cleaner.
Phase: 4.4 - Give ‘em that Asteroid-look

- So let's go from Ball to rock. Click on the Hyper Texture tab and choose any one of the textures (I chose Turbulence).
- Now just play with the settings until you get something you like.
**Phase: 5.1 – Could use some color**

- Yes, asteroids are lumpy rocks, but they’re also not a bland shade of grey. Let’s give them some color by switching over to the Shading tab.

- Choose a color that’s appropriate for an asteroid. I chose a shade of blue. Red=88, Green=102, Blue=115.

- To give it some diffusion, I added a gradient to the diffusion channel.
Phase: 5.2 – Finishing up

- Add in some final details to give the asteroids a better look.
  Specularity = 20, Glossiness = 10, Reflection = 10
Well, overall for a quick tutorial I think it turned out pretty good.

You now see how you can use spray points and Hypervoxels to create simple asteroids that all have a varied size and shape.

The benefit to this is that you don’t have to texture each and every asteroid and it can reduce render time.

This method can also be used to create stars.
I want to thank the following site for their contribution to this tutorial:

Planet Surface Texture:  
http://members.gamedev.net/ysaneya/Infinity/planet_t_2.jpg