



Next Steps: Procedural Animation

M08 - Particle Examples

Agenda

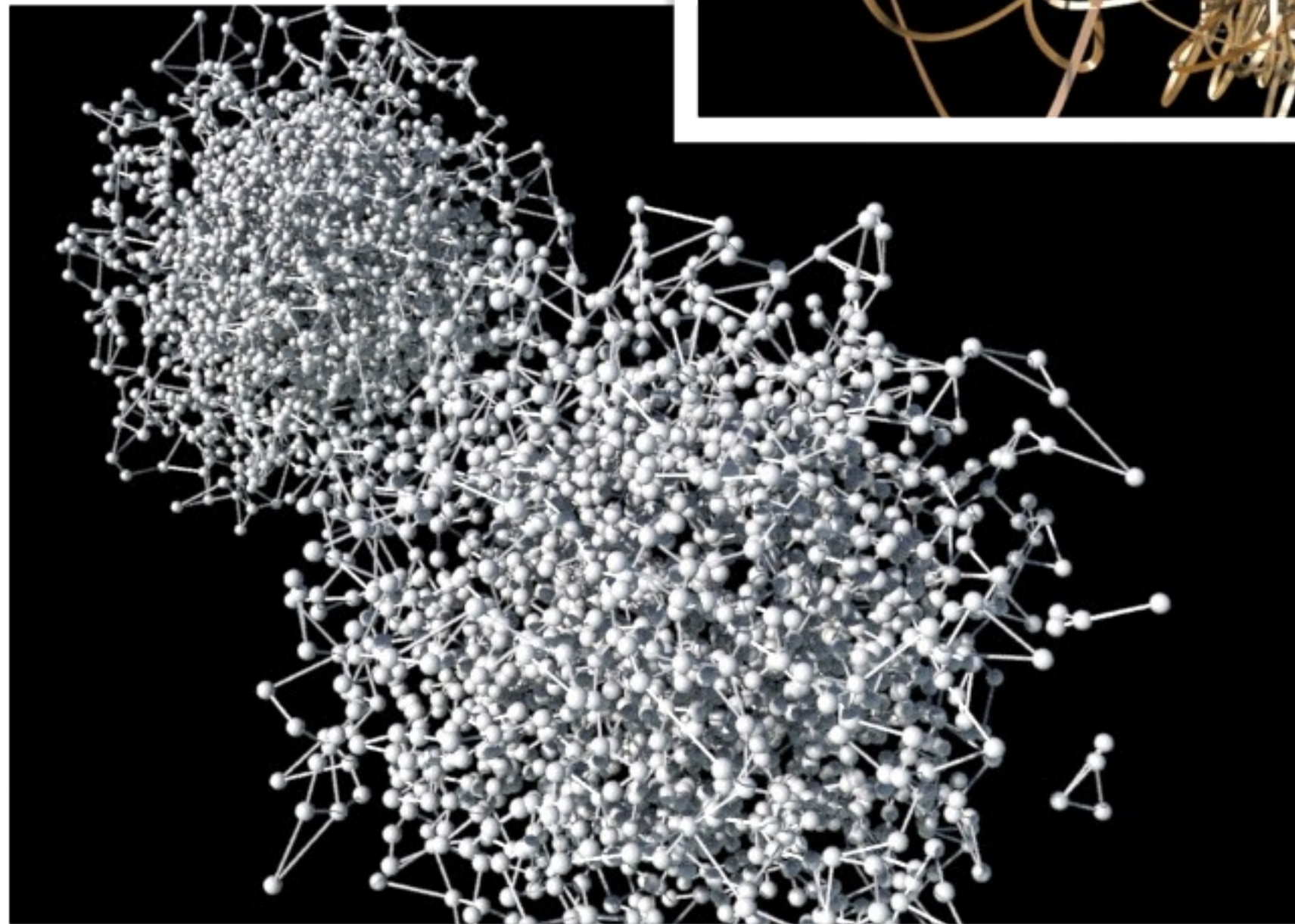
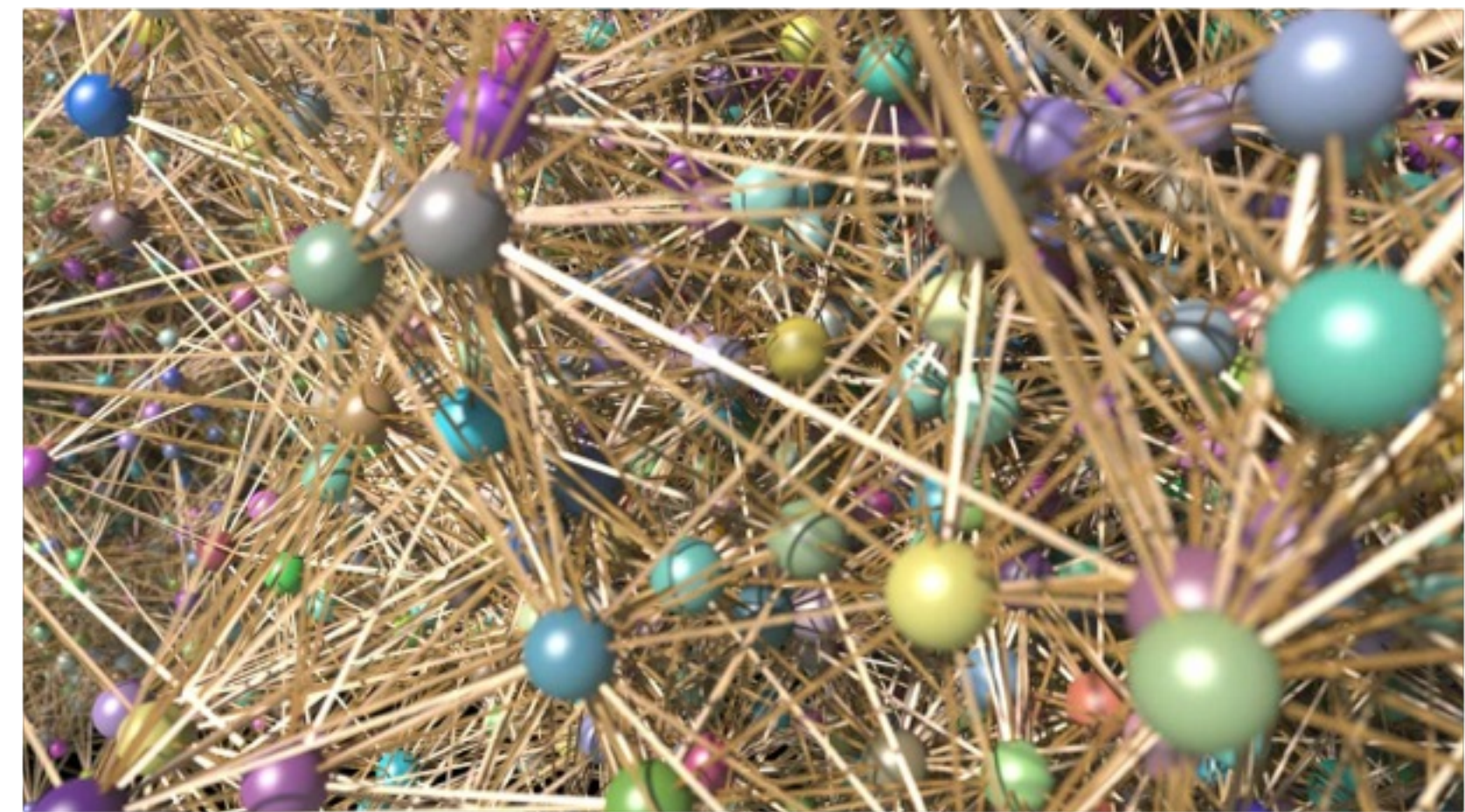
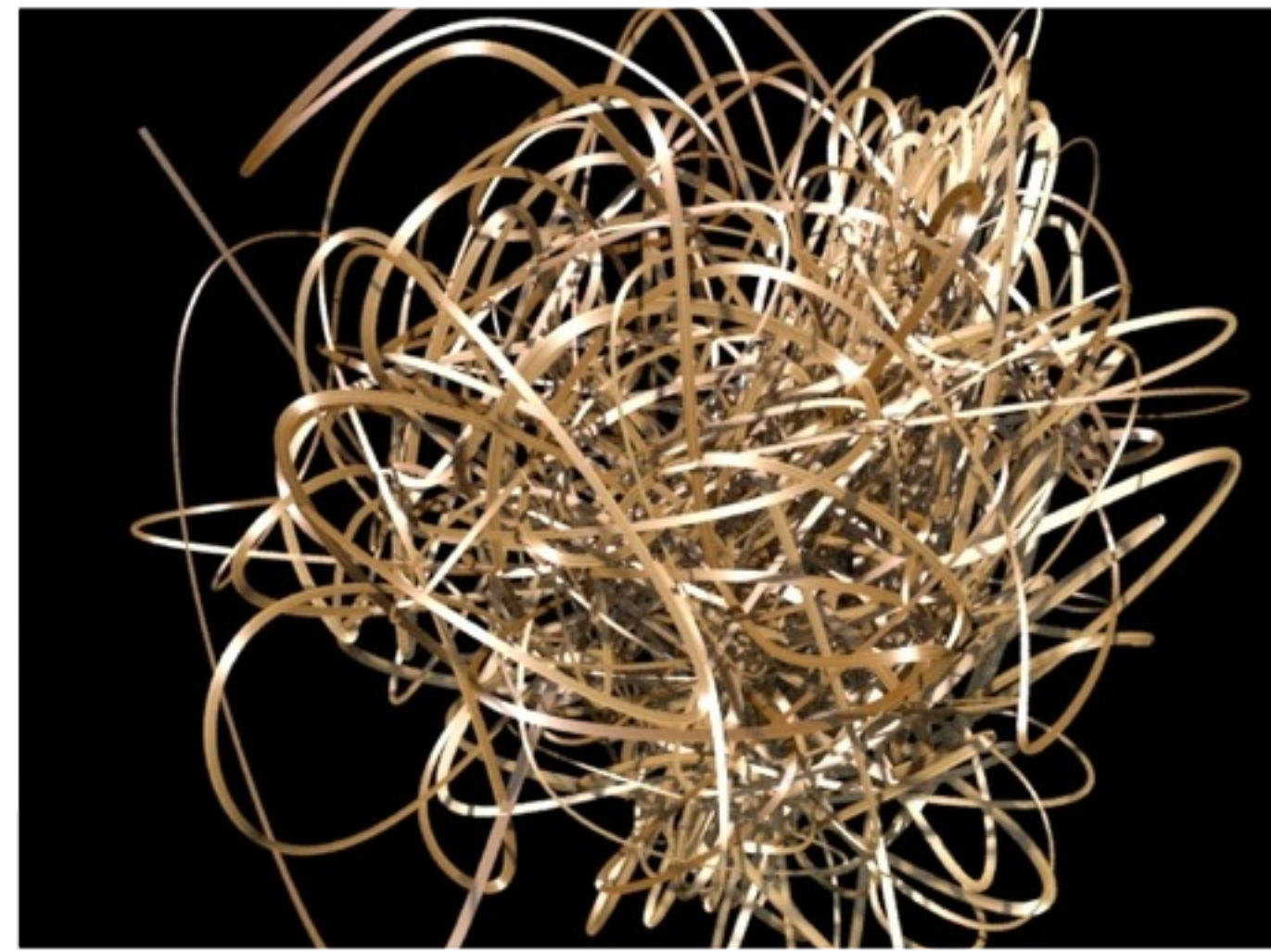
Particle Examples

Making Curvy Ribbons with a SOP Solver

Network Line Connections with Source Particles

Pile of BBs with Volume Collisions

Examples



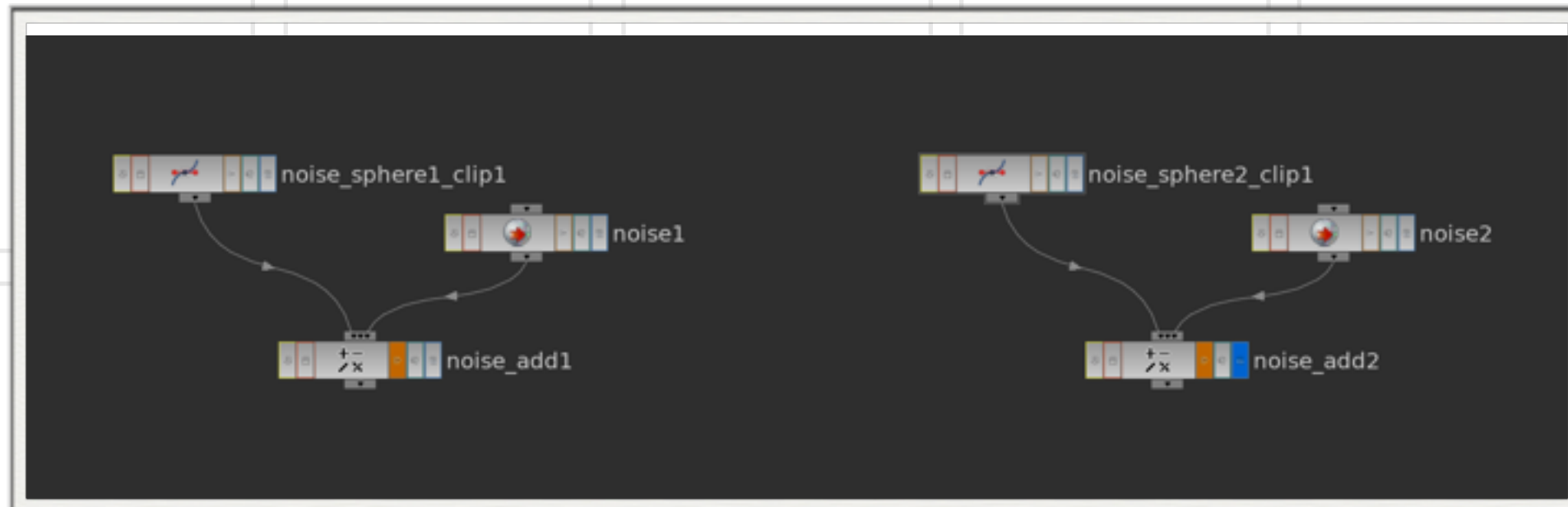


Curve Thingy

SOP Solver

**SIDE EFFECTS
SOFTWARE**

The Setup



At the Object level drop down a sphere

Dive inside

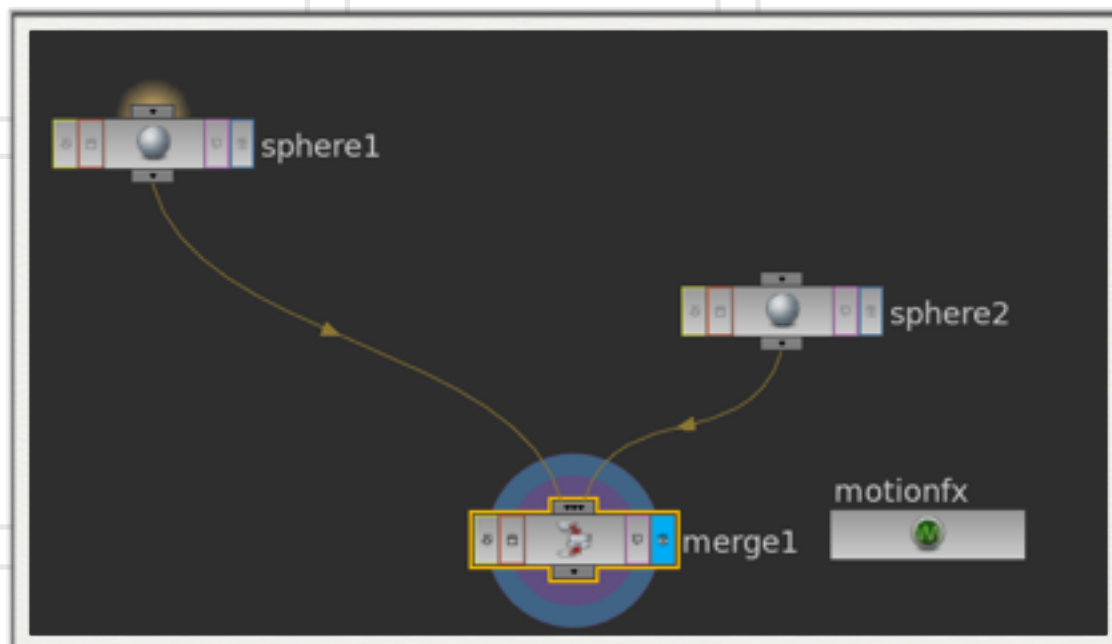
We want to keep the sphere a primitive.

We keep it a primitive because all we want is a single point

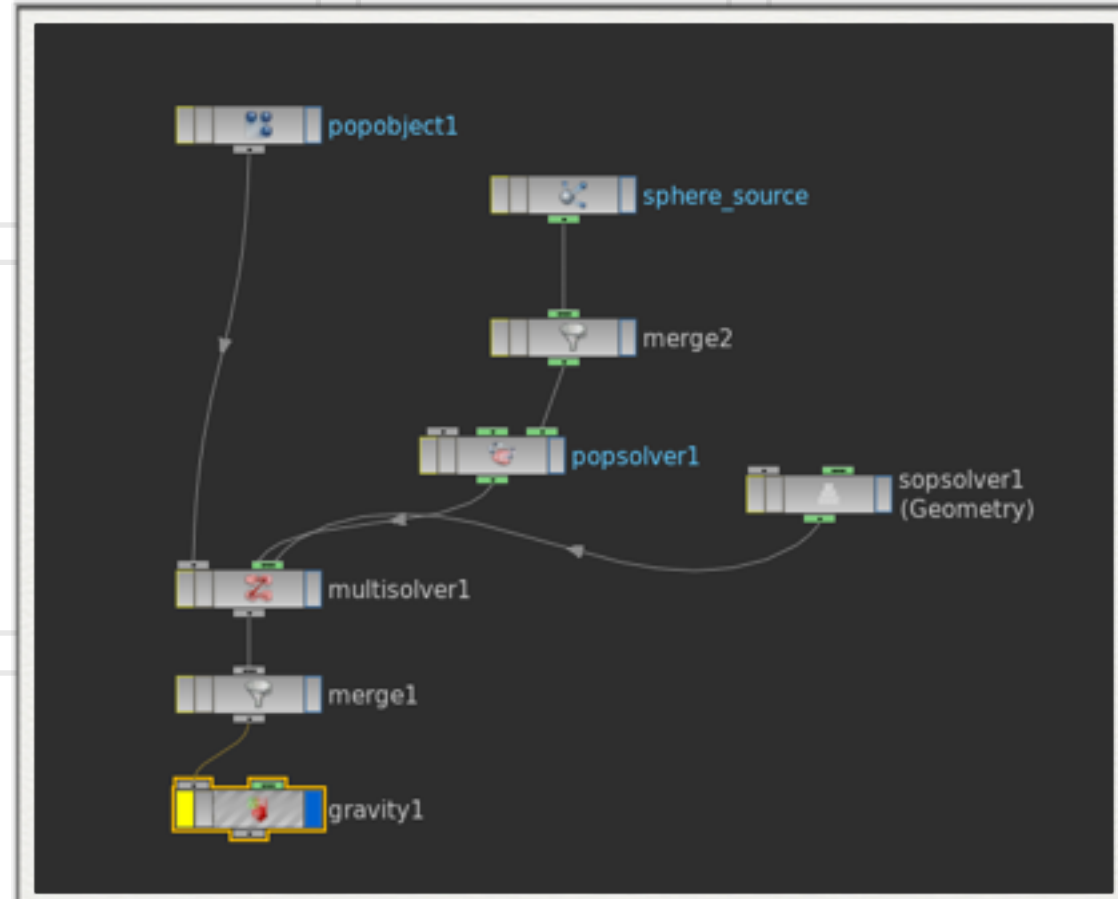
Duplicate the Sphere at the Geometry Level

Apply a Merge

Now for each sphere add a Motion FX (noise) with different seeds and periods to get each sphere to move around



AutoDopNetwork



Dive inside the AutoDopNetwork

We are going to use a SOPSolver

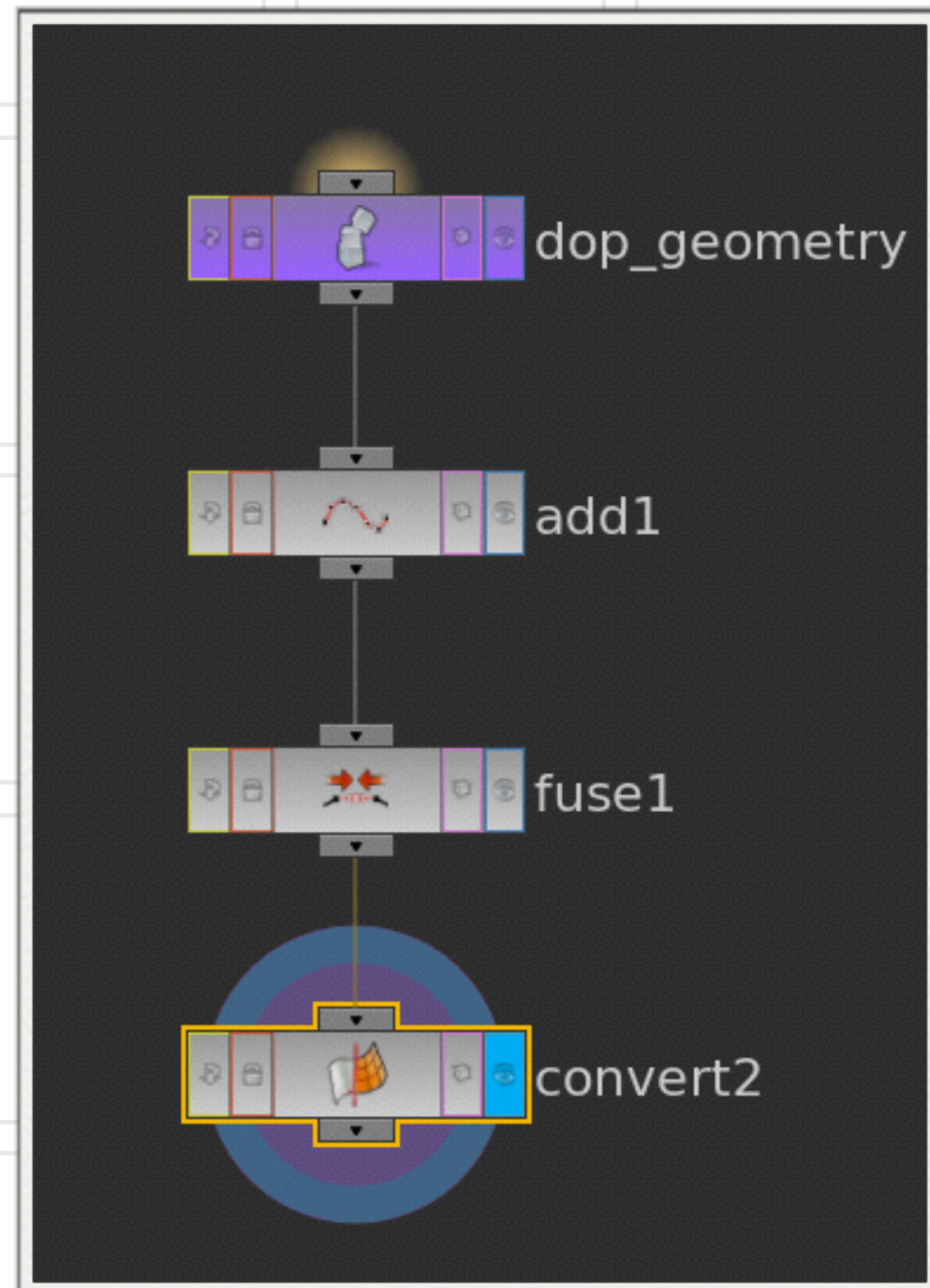
Drop down a Multiple Solver

Drop dow a SOP Solver

Wire as show on the left

We do not need gravity so bypass the Gravity Node

SOP Solver



Dive inside the SOP Solver

Append an Add SOP

We want to connect all the point that the POP Object is creating into polygons

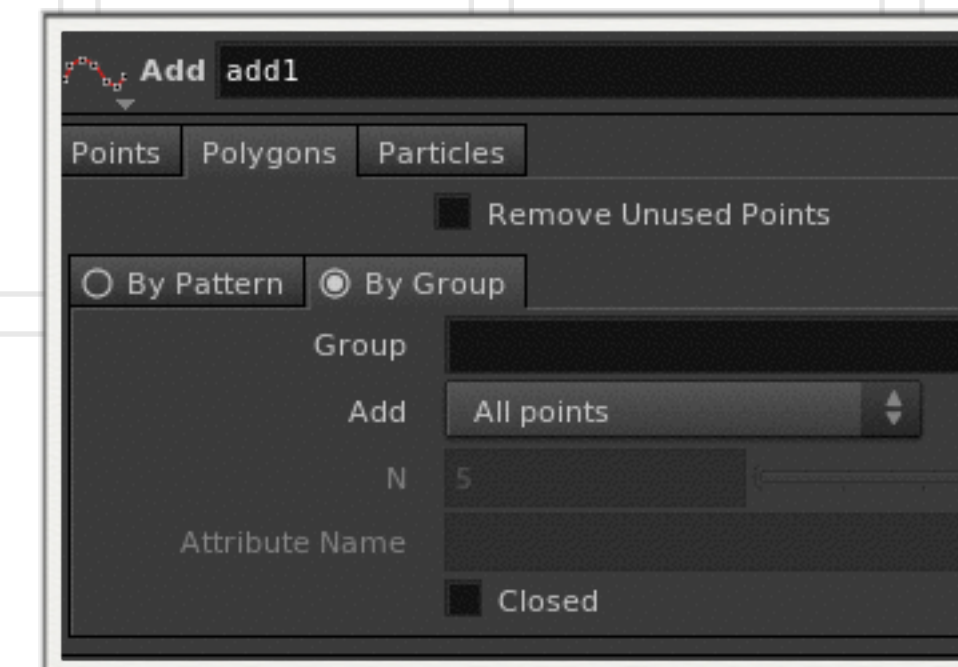
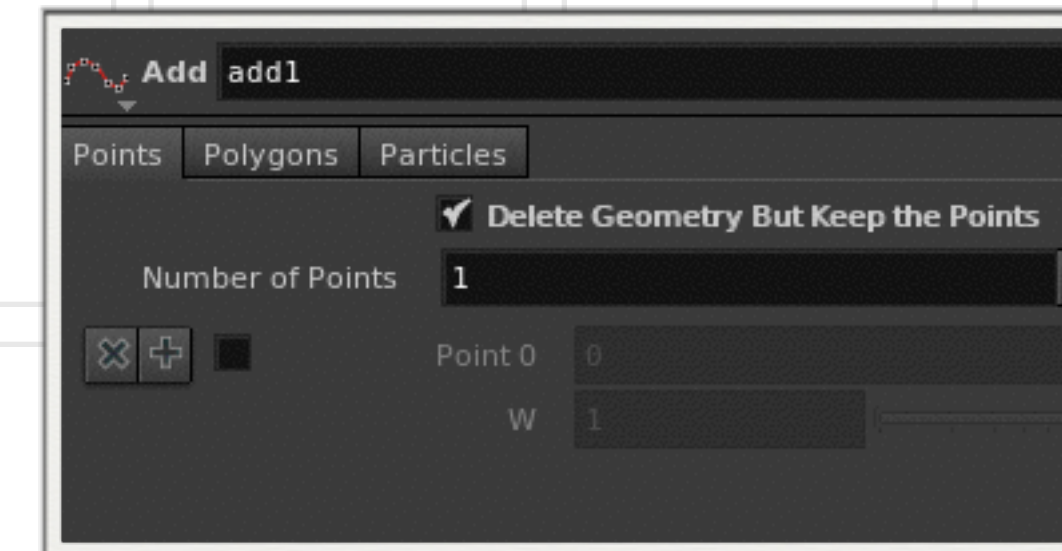
Select “Delete Geometry But Keep Points

In the Polygons tab - Select “By Group” tab

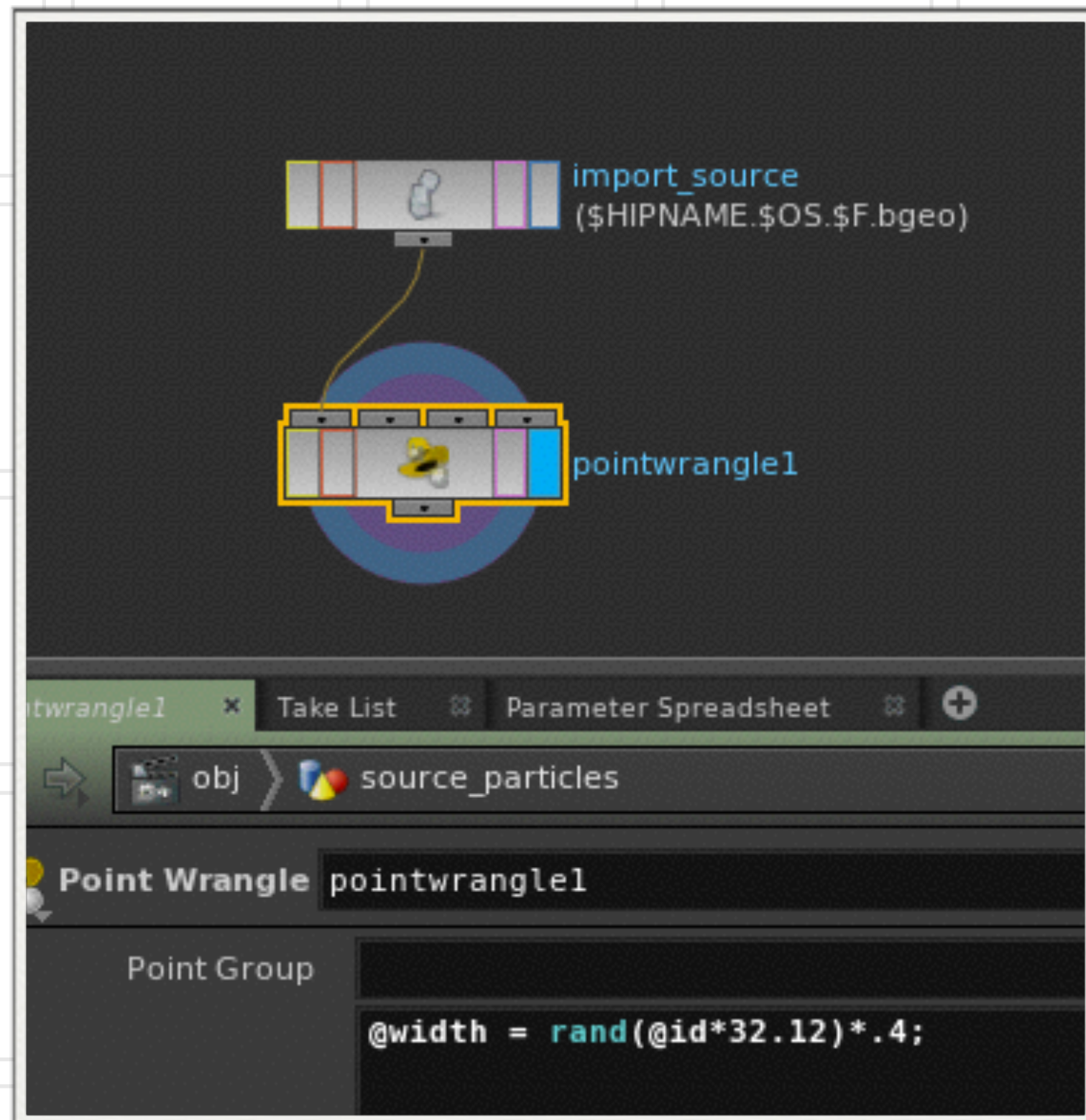
Add - “All Points

Append a Fuse to fuse all the points together

Append a Convert and convert to NURB Curves



SOP Solver



Go up to the Object Level

Dive inside the SOP Solver

Append a PointWrangle to the “import source”

We want to randomize the thickness of the rendered curve

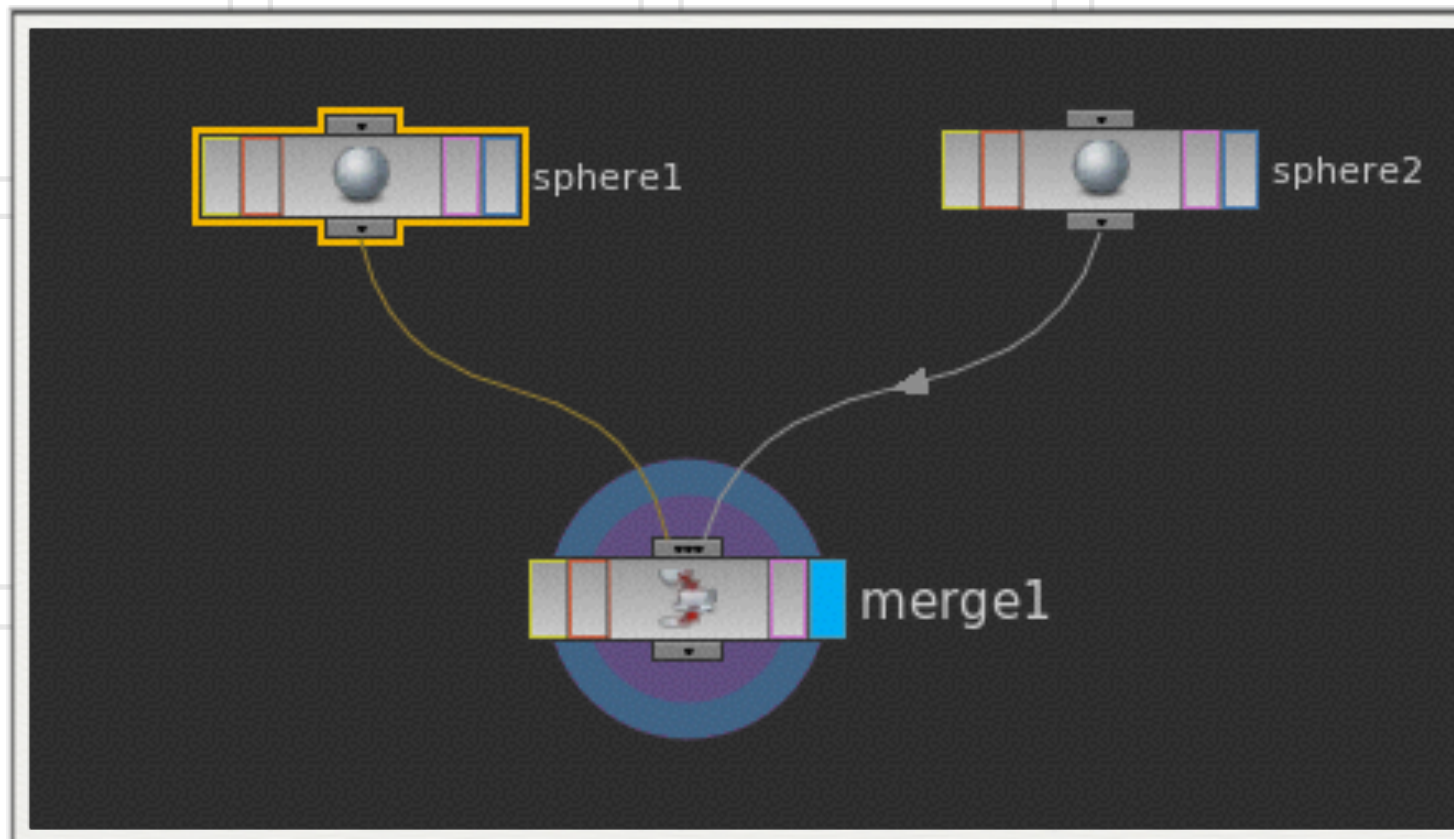
```
@width = rand(@id*32.12)*.4;
```



Node Connections

Source Particles

Setup



Drop down a Sphere and dive inside

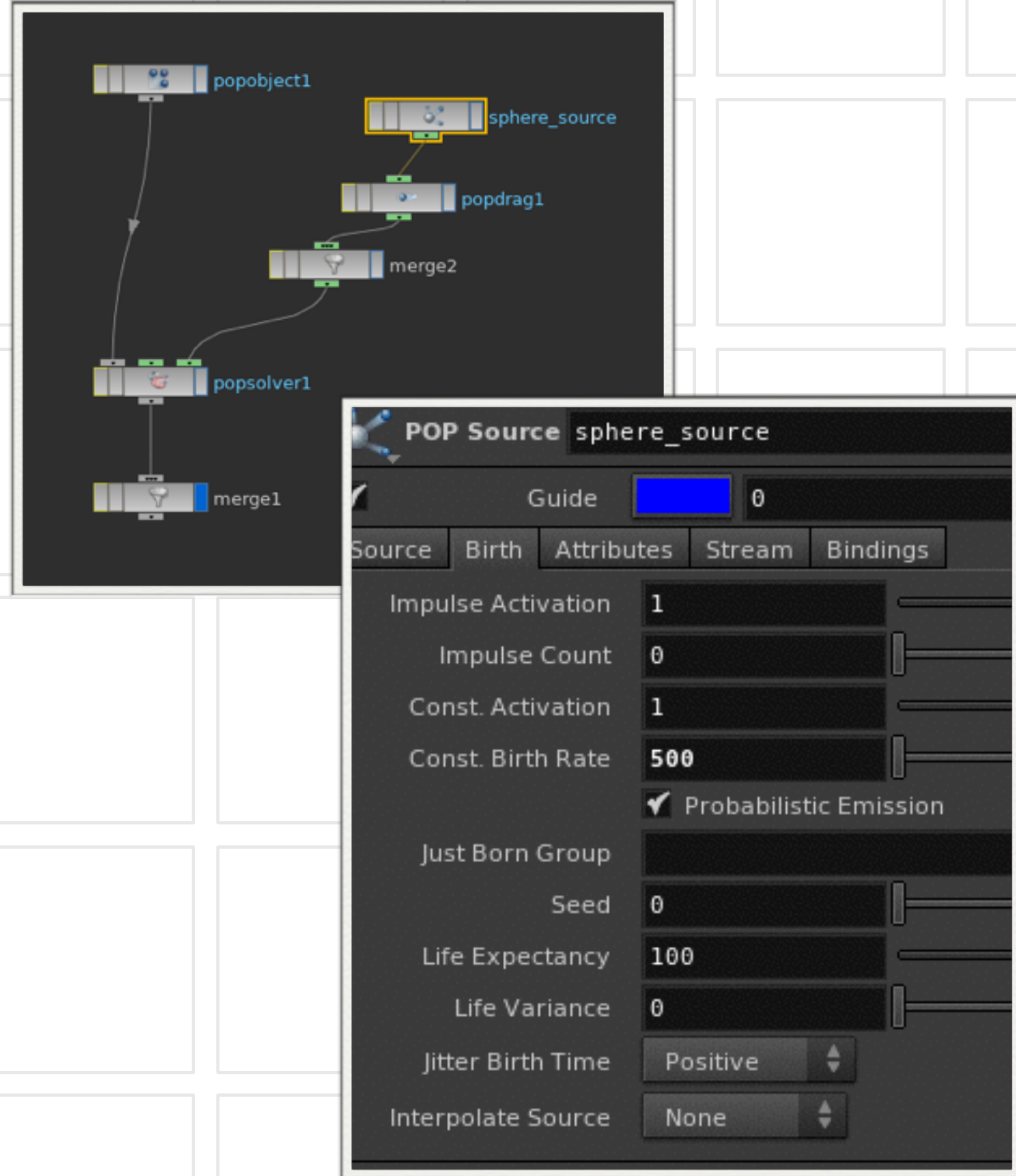
Make it a polygonal geometry

Copy and paste the Sphere Geometry to make another sphere

Offset the sphere by (5,5,0)

Merge the two spheres

AutoDOPNetwork



At the Object level make the sphere object into a Particle Source

Dive Inside the AutoDOPNetwork

Delete the Gravity DOP. We do not need gravity for this example

There are too many particle on this sim

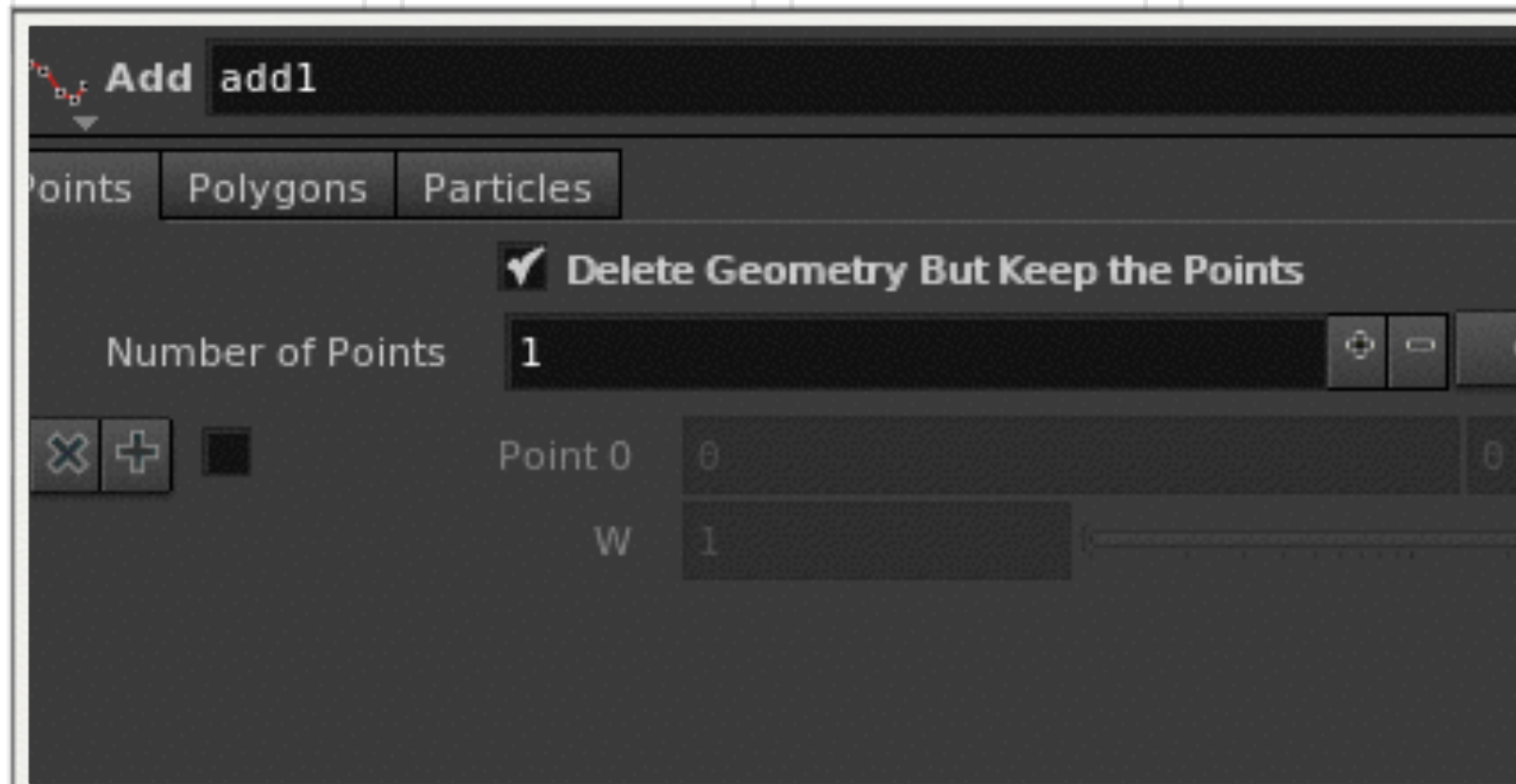
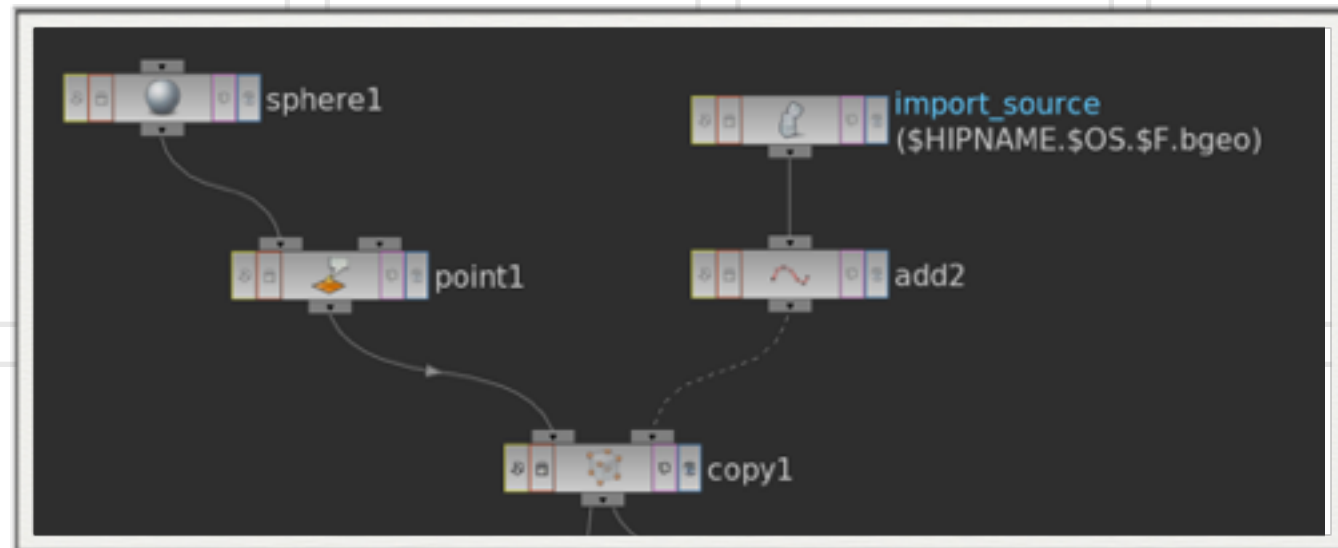
Select the Sphere Object

Select the Birth Tab

Set Constant Birth Rate to 500

Append a POP Drag Force to slow the expansion of particles

Source Particles



Go back up to the Object Level

Dive into the Source Particles Node

Drop down a sphere, data type primitive

Drop down a Copy SOP

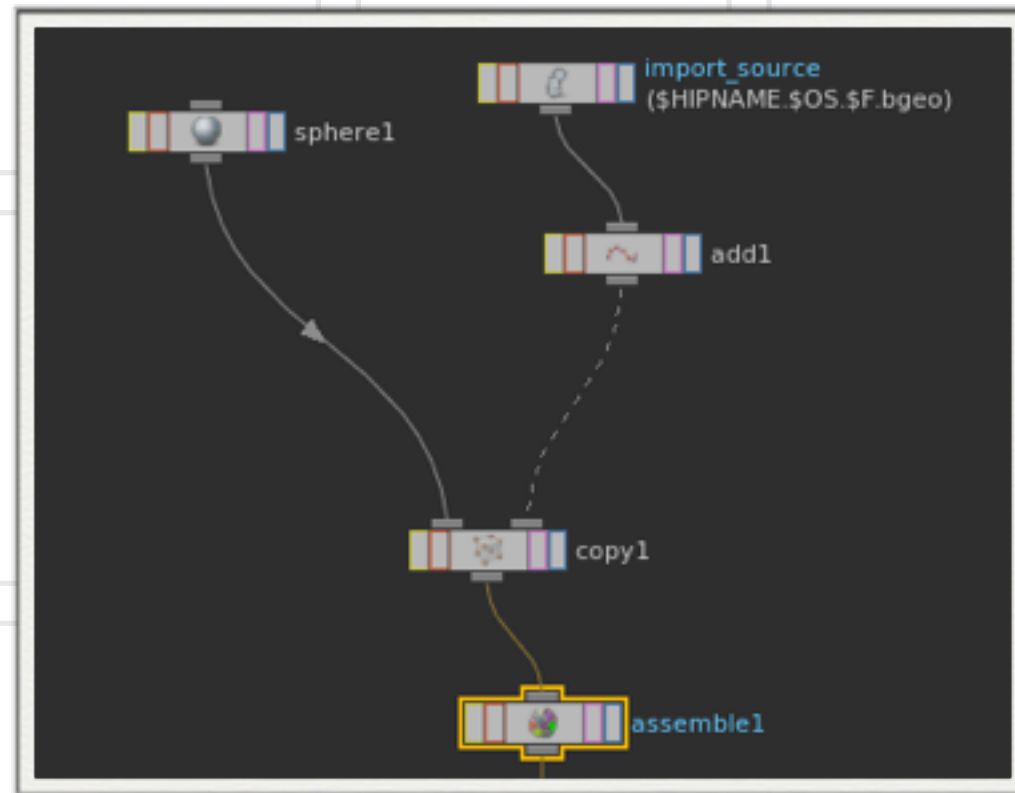
Copy the Spheres onto the sphere source

Append a Add SOP to the import Source

Delete Geometry But Keep The Points

If you want to add color to your spheres append a Point SOP and use a COPY Stamp to randomize your colors

Particle Source (Cont.)



Append an Assemble SOP - Remember an Assemble SOP can create a “name” primitive attribute than can name each particle



Assemble SOP



Assemble surface node

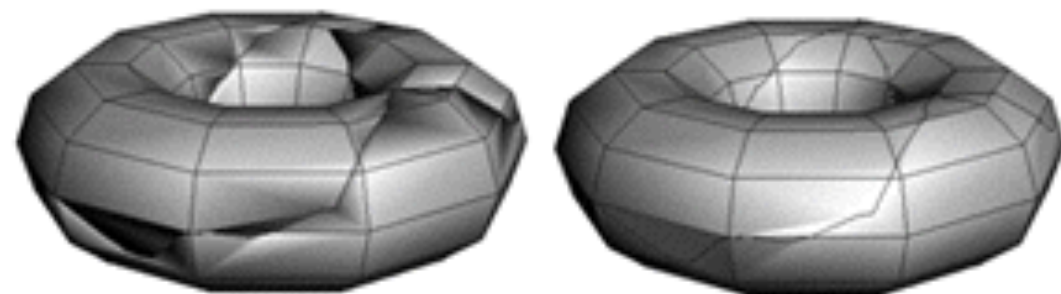
Cleans up a series of break operations and creates the resulting pieces.

This operator is used to finish the process of breaking a piece of geometry. It uses the groups and connected pieces created by the [Break](#) operator to output a set of disconnected pieces.

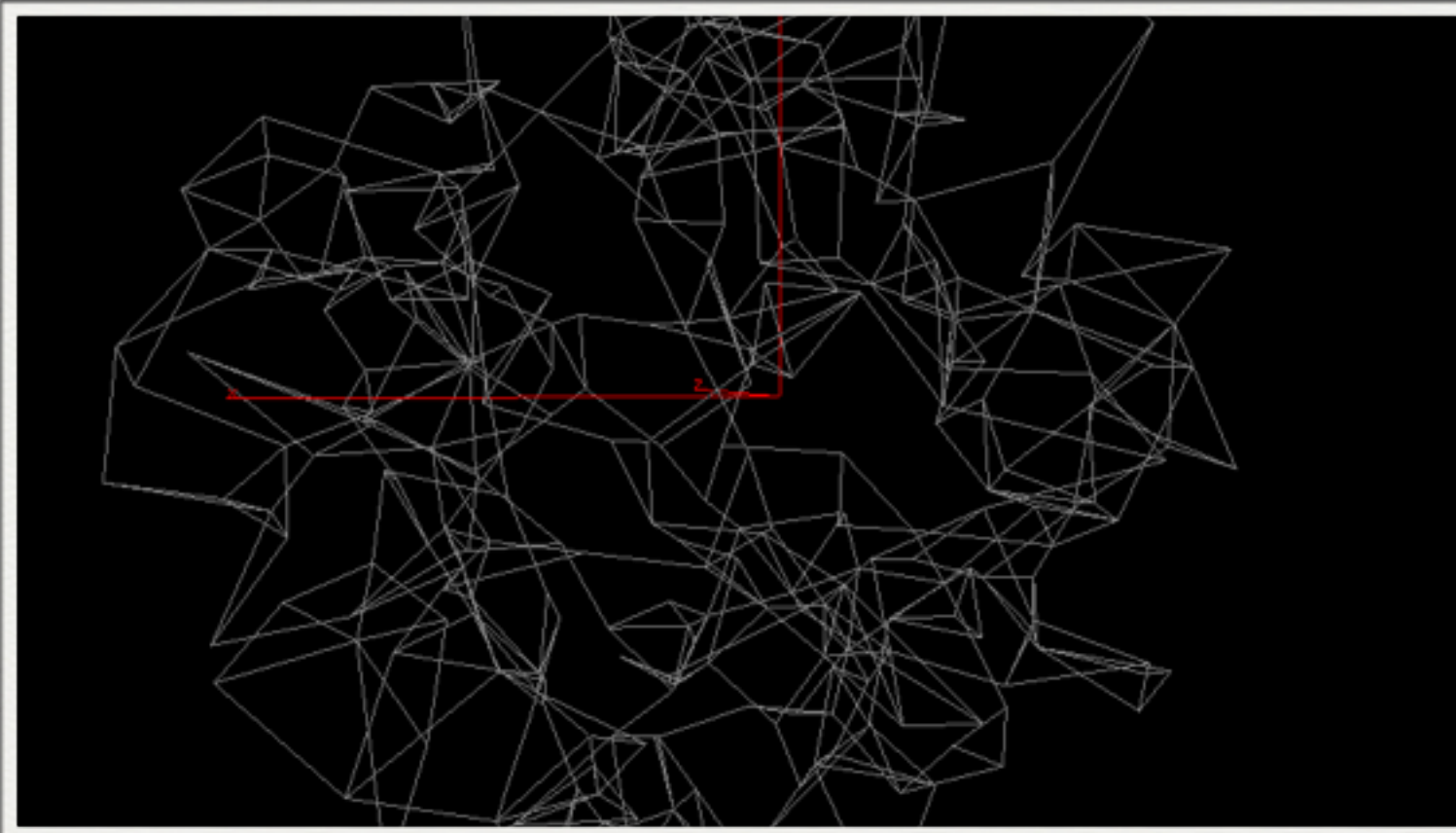
Note

If your broken object is made into a dynamic object, you do not need to append an assemble because one will be added automatically.

The assemble node cleans up the geometry. The following screen captures show what the geometry looks like before using the assemble tool, and after.



Connect Adjacent Pieces



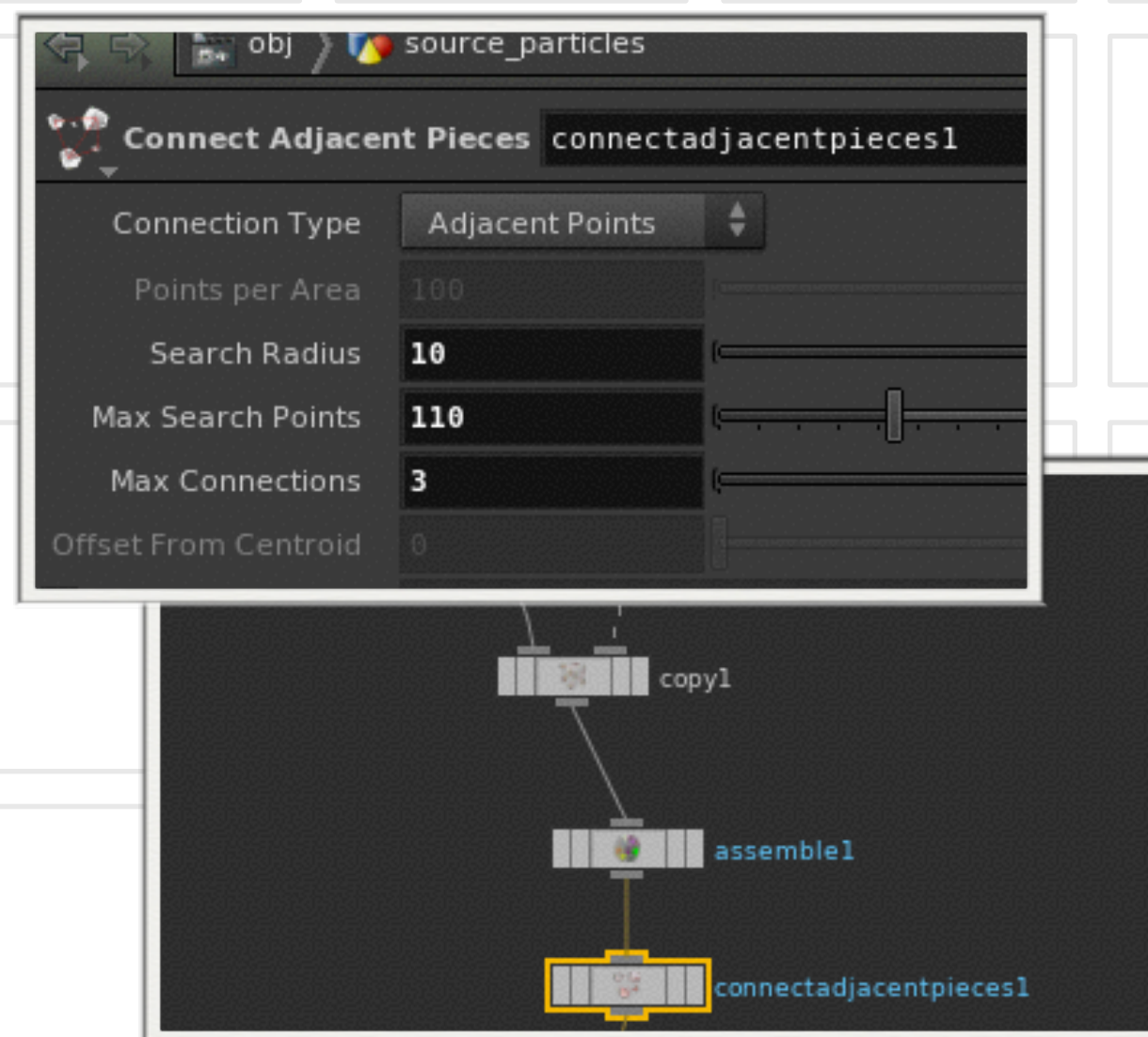
Append a Connect Adjacent Pieces to the Assemble SOP

This will allow you to control:

How many wires can be connected to each sphere

What is the search radius

What is the number of nearby nodes it can search



Connect Adjacent Pieces



Connect Adjacent Pieces surface node

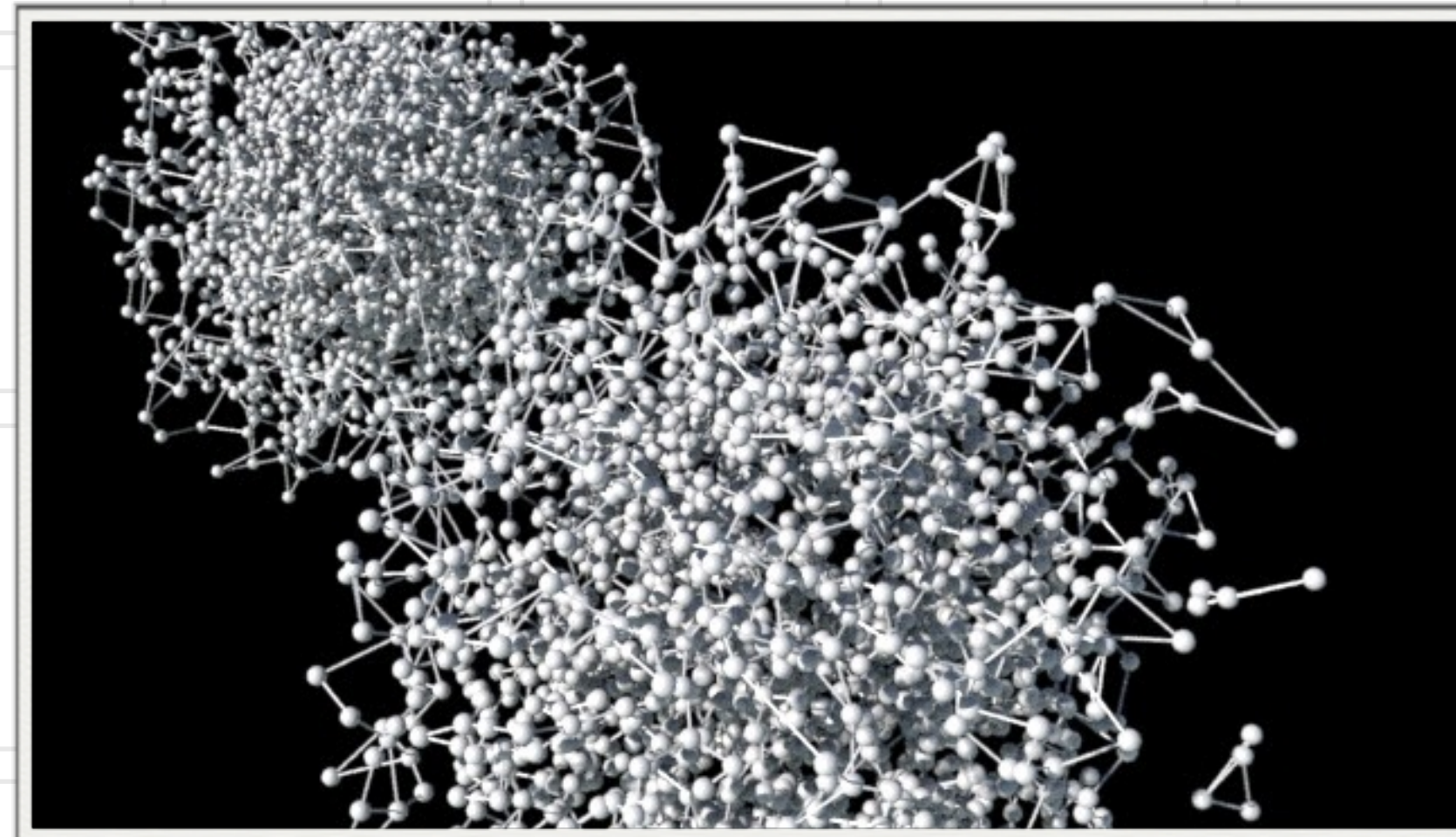
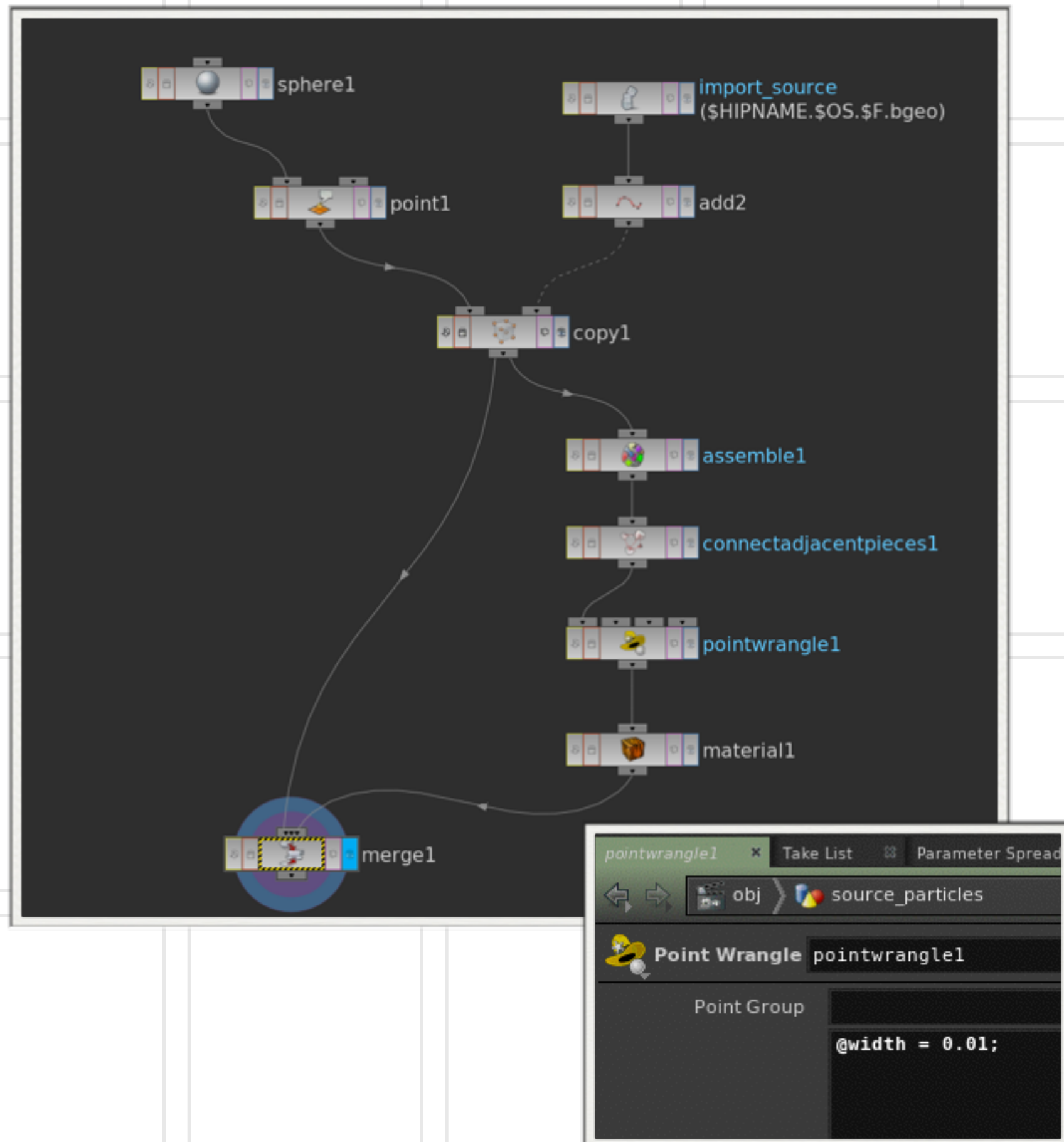
Creates lines between nearby pieces.

This node creates a set of polygons that connect points together from nearby pieces. This is useful for creating a [Constraint Network](#) that constrains or glues together adjacent objects in a simulation.

The `name` primitive attribute is used to determine which primitives in the input geometry belong to each piece. The output geometry contains a `name` point attribute to identify the piece that each point belongs to.

Parameters

Final Network



Merge the COPY SOP with the ConnectAdjacentPieces

Append a Point Wrangle to the ConnectAdjacentPieces:

@width = .01;



BB Pile

Source Particles

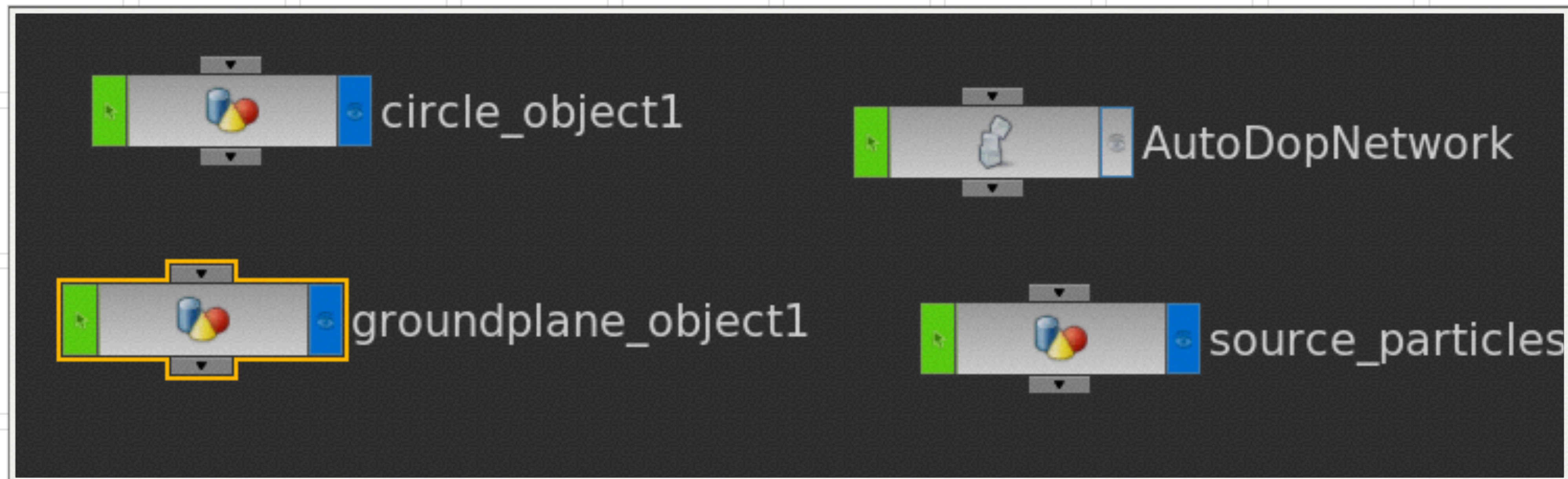
**SIDE EFFECTS
SOFTWARE**

Warning

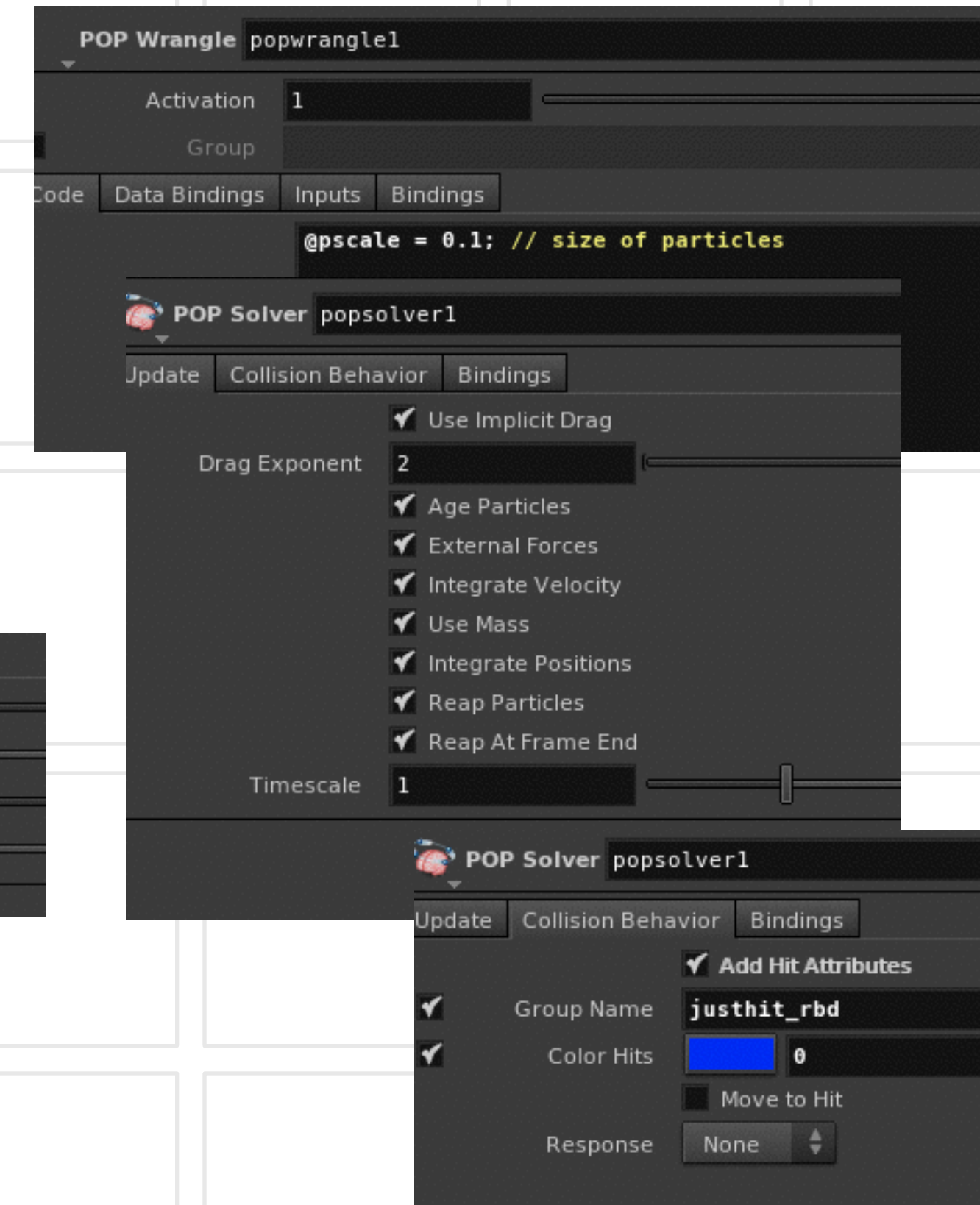
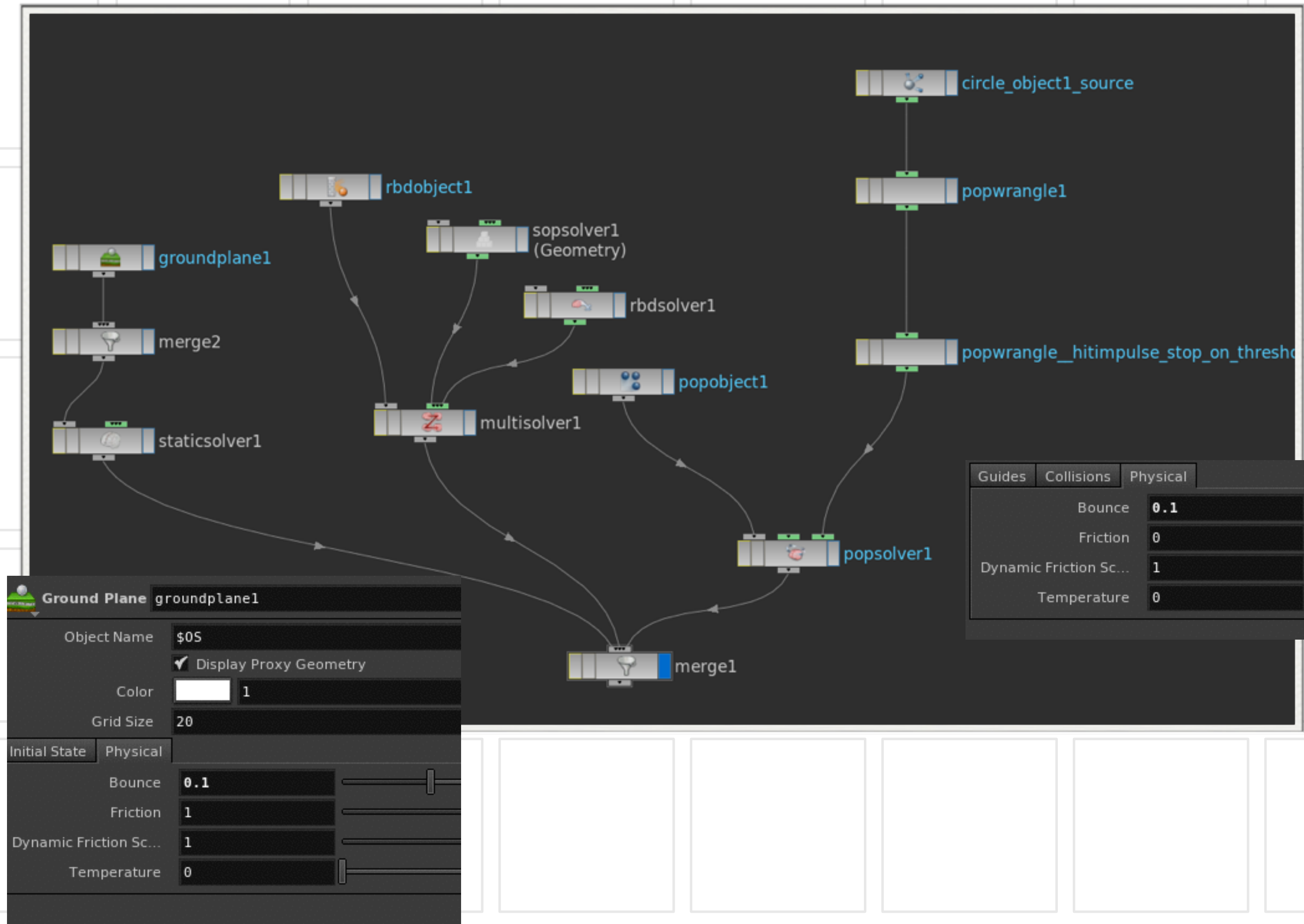
This network is a bit too convoluted for me to lay it out on slides so you will have to watch the video or reverse engineer the .hip file.

The following slides are just screen captures of the major nodes

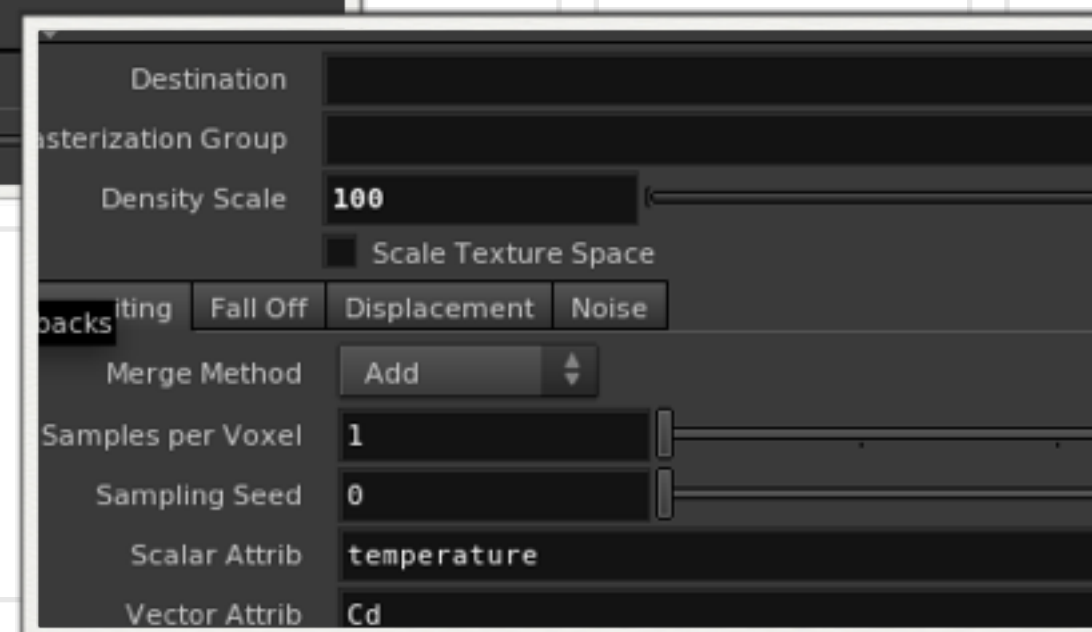
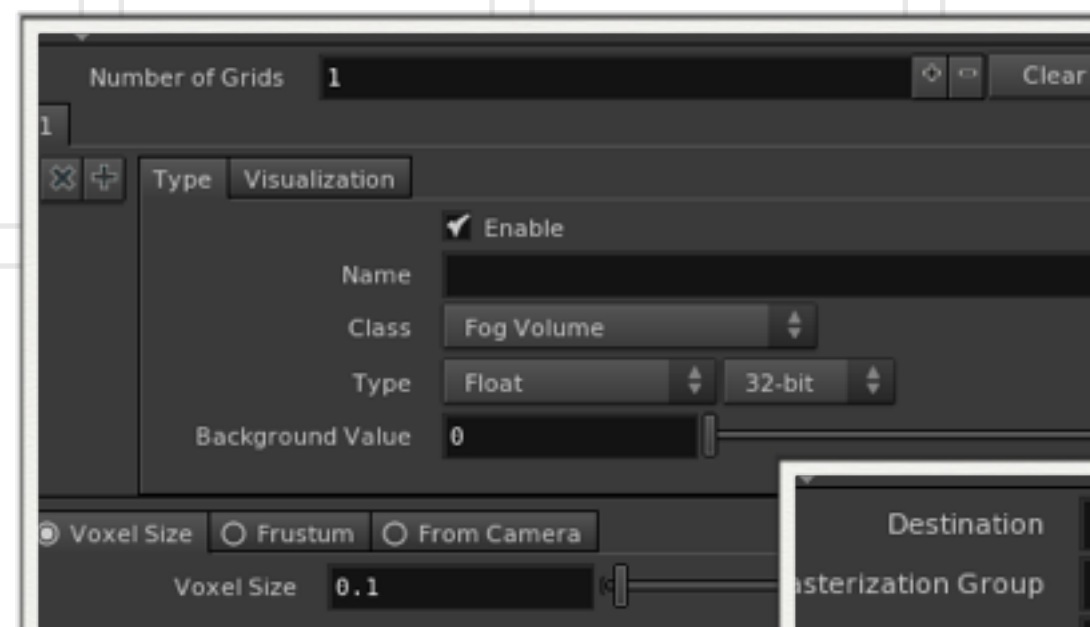
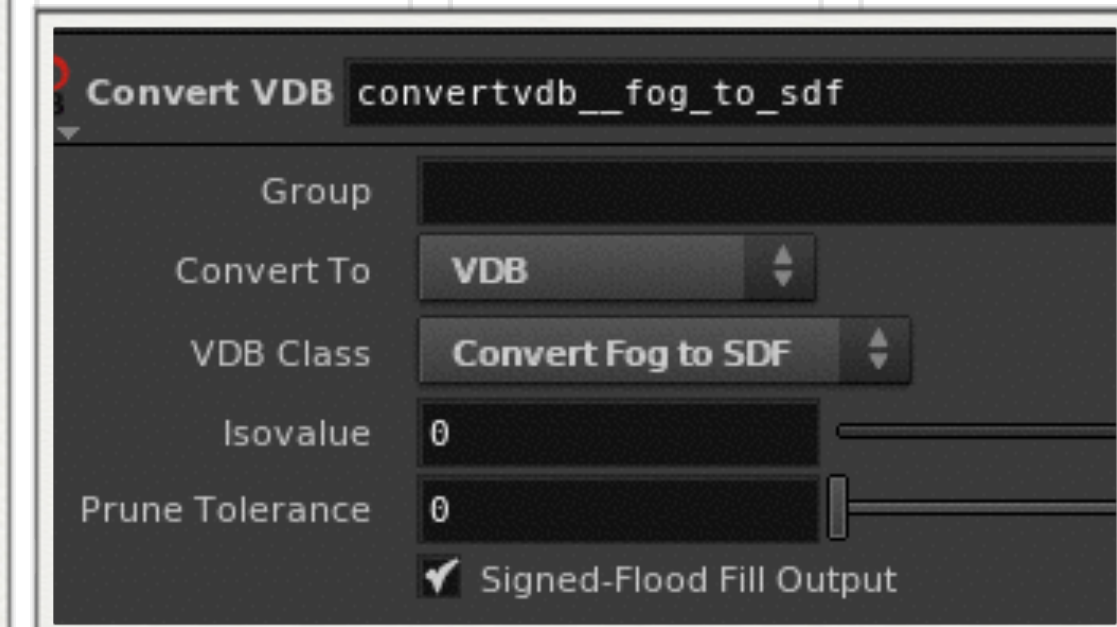
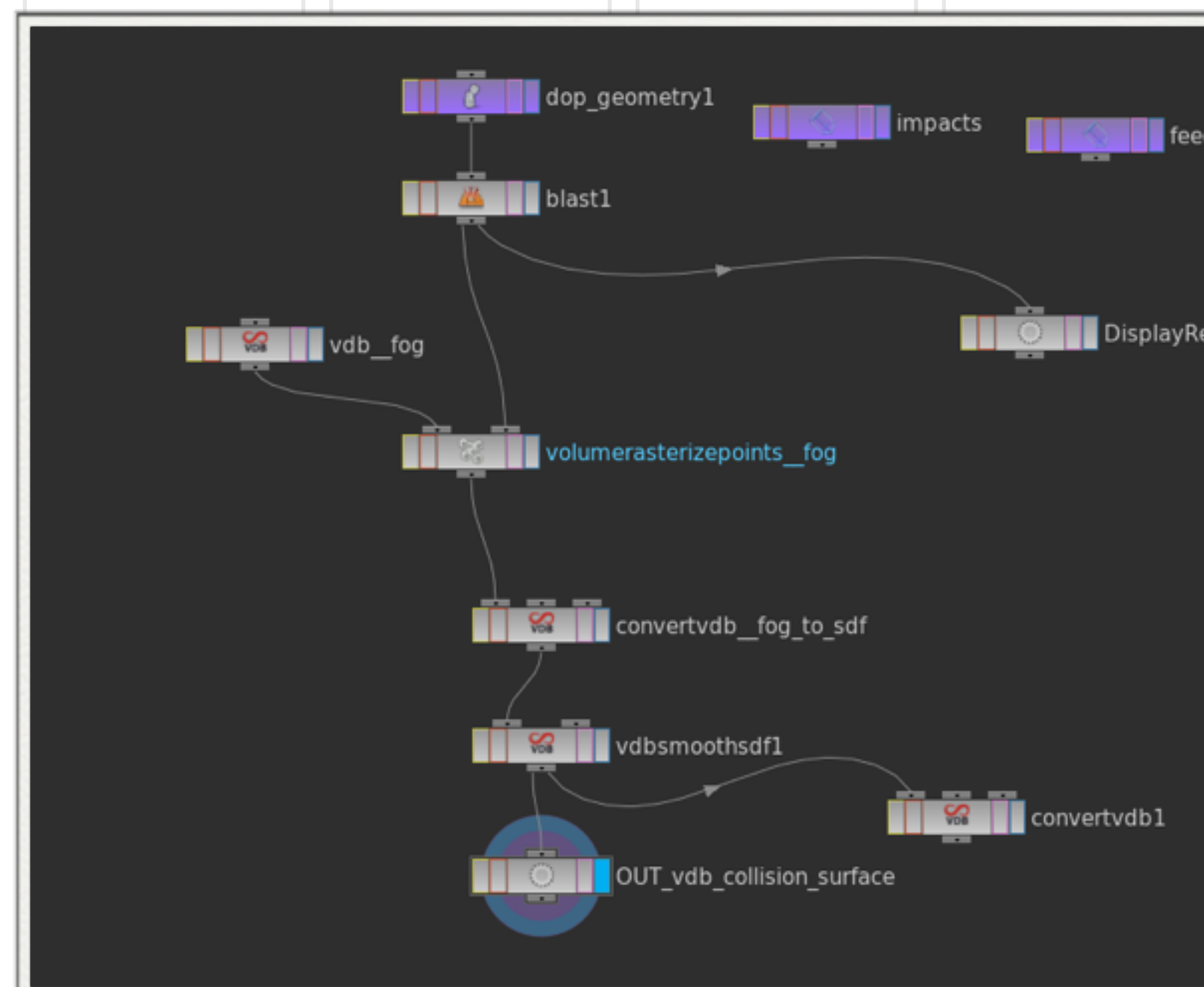
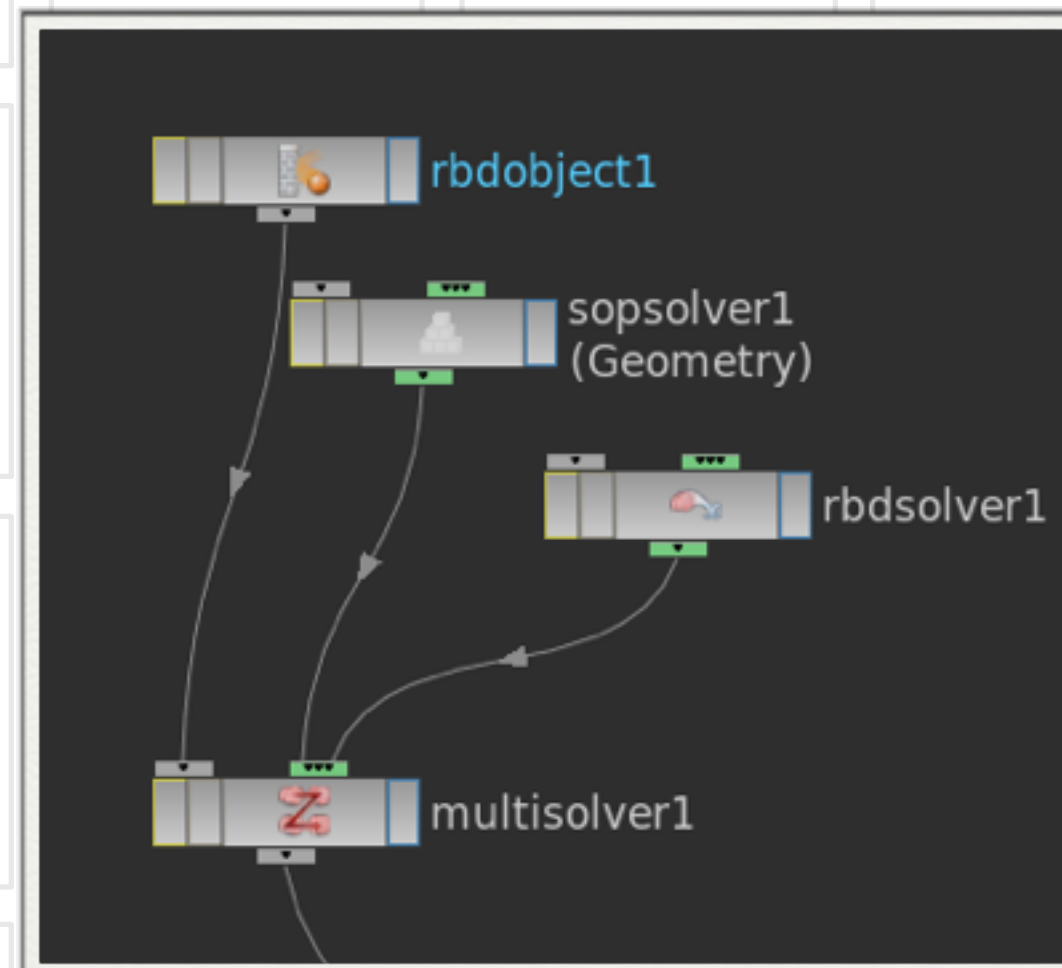
Important Nodes



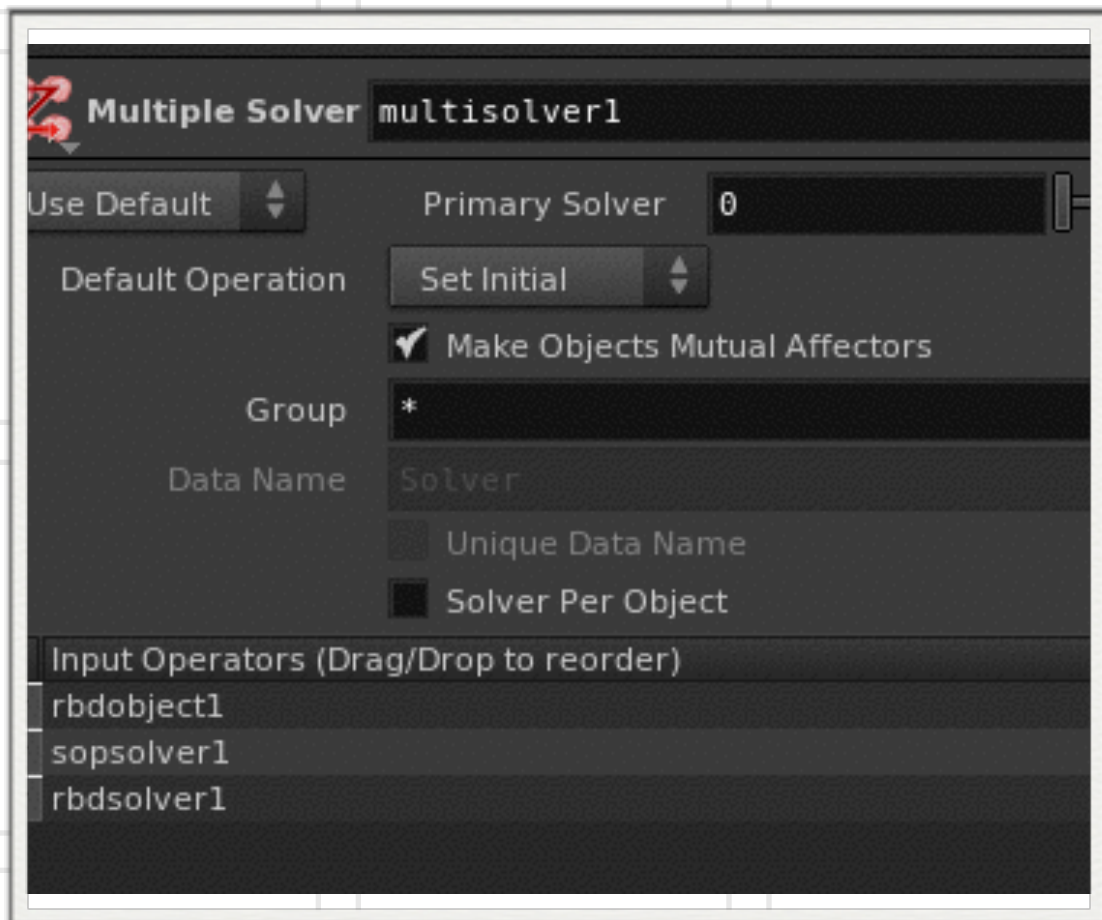
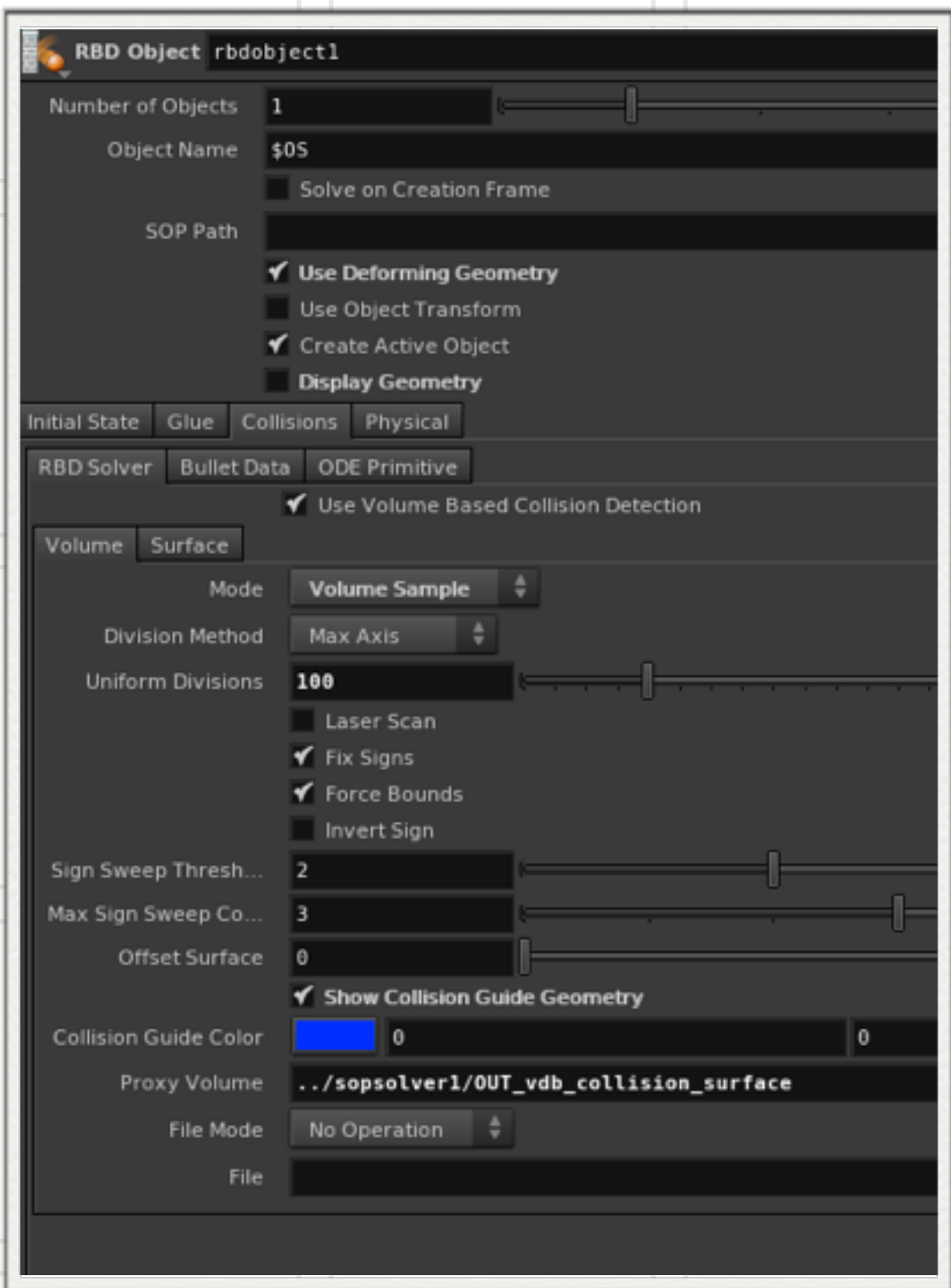
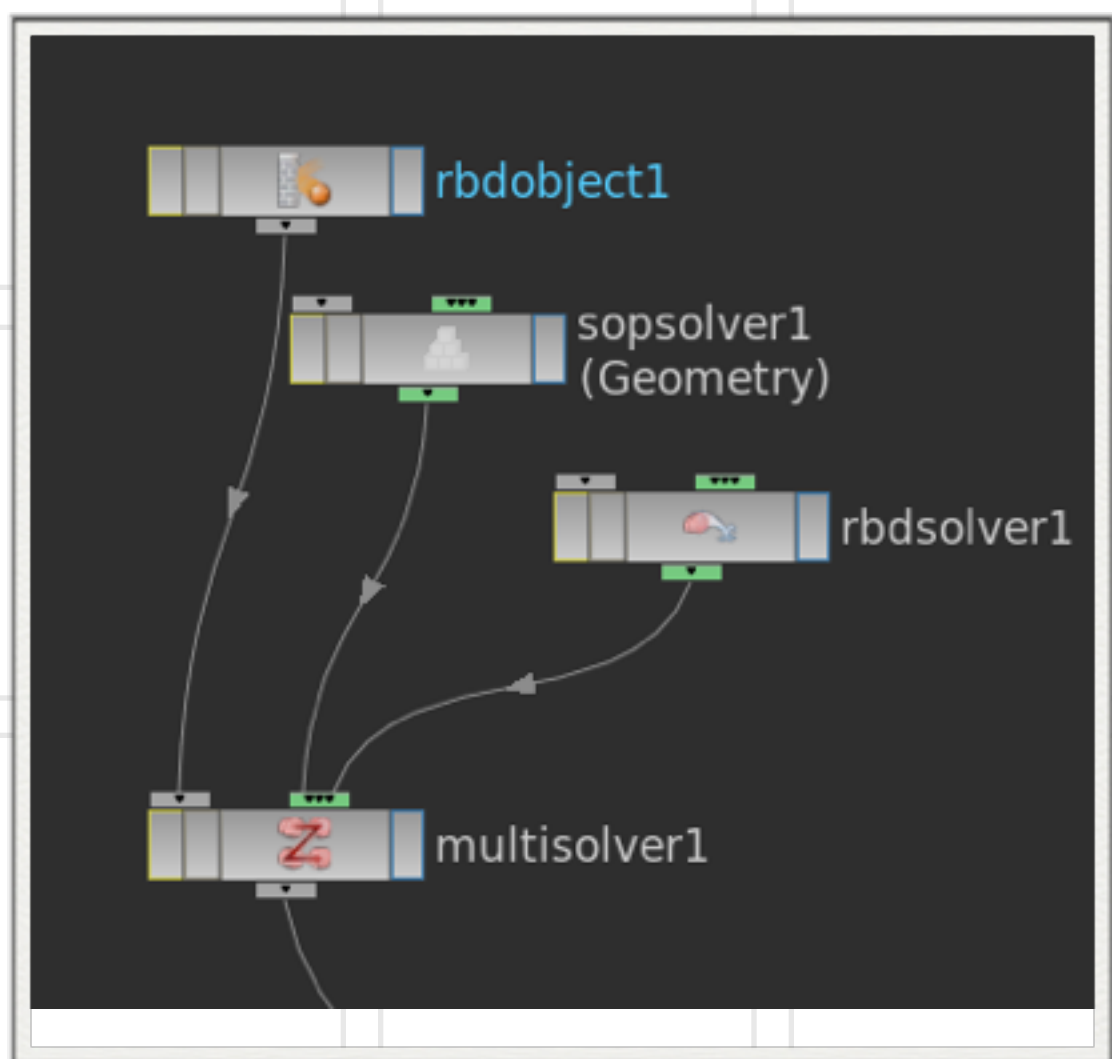
Important Nodes



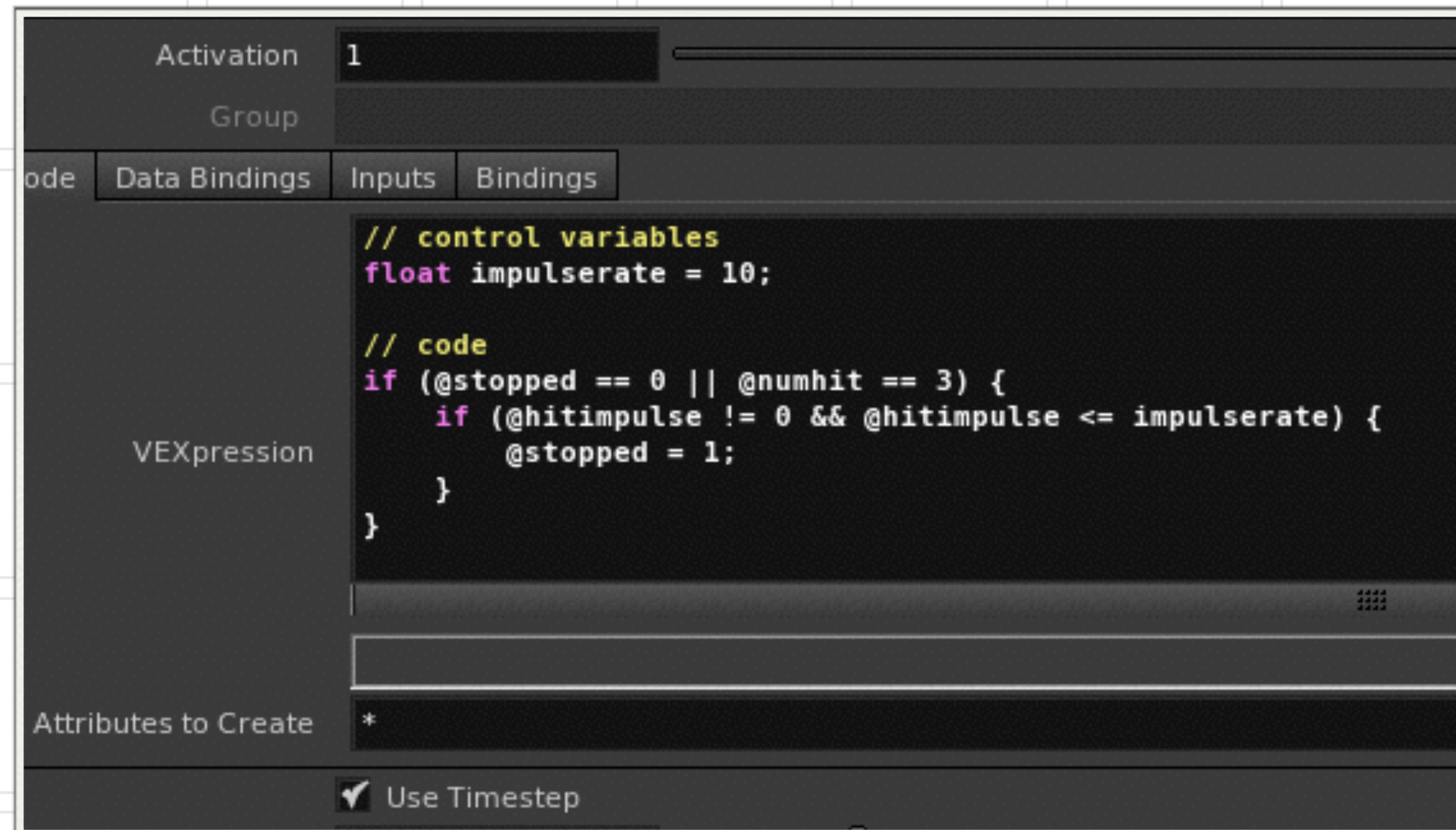
Multisolver - SOP Solver



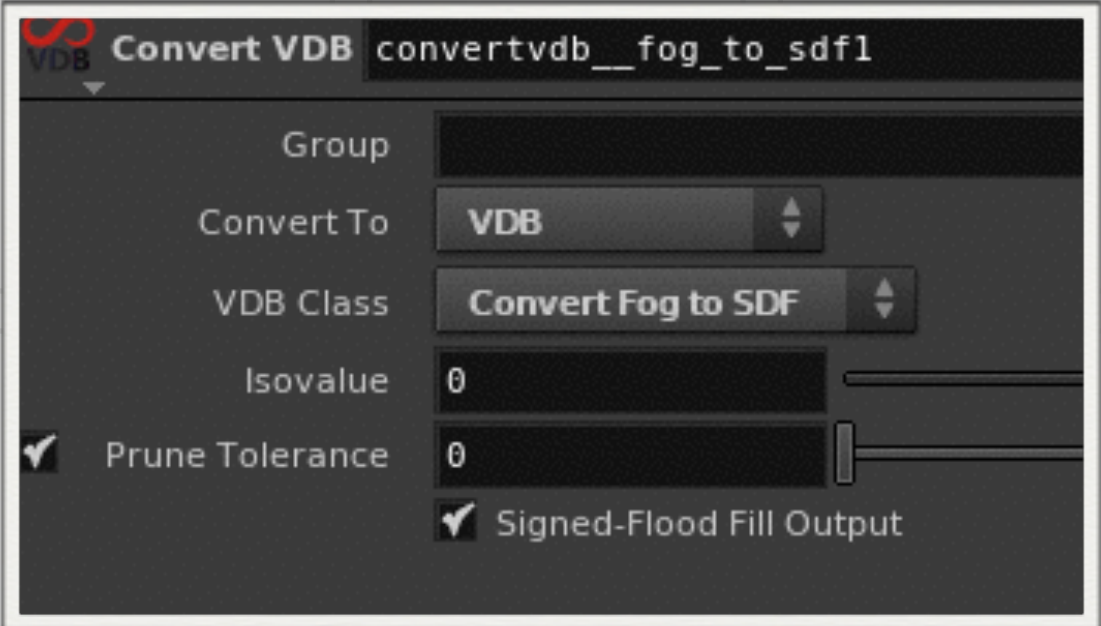
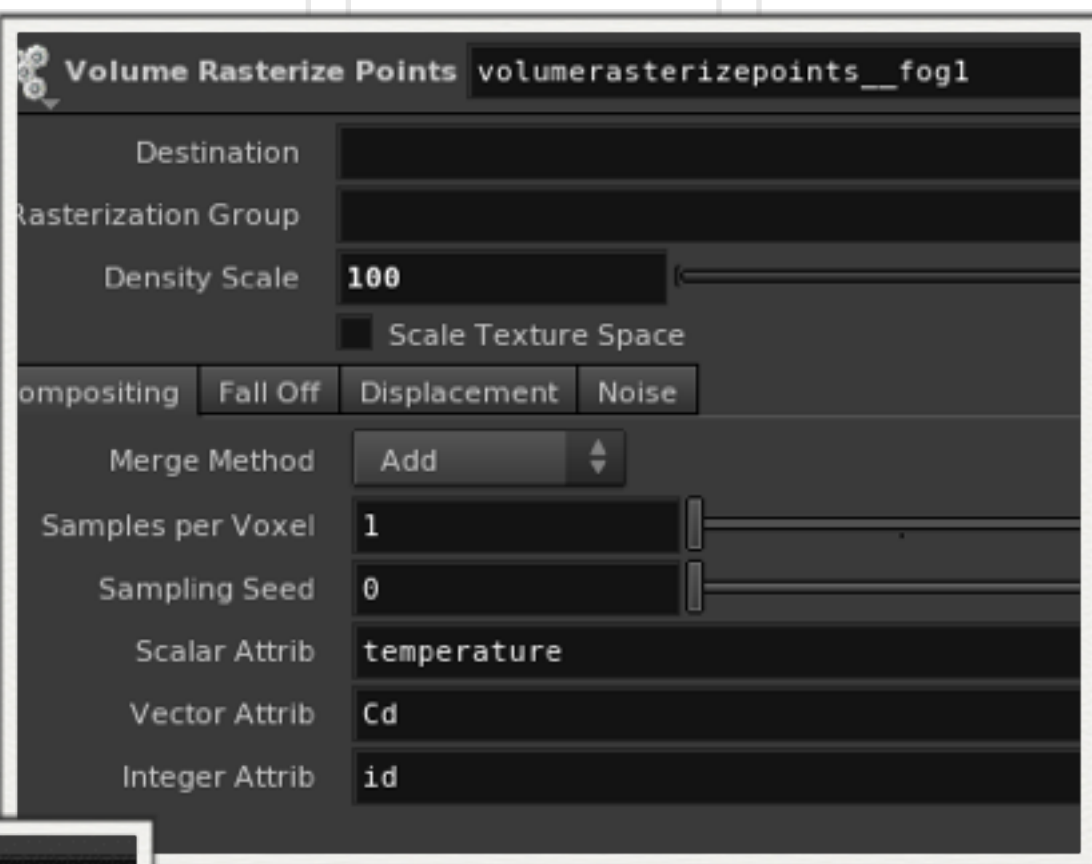
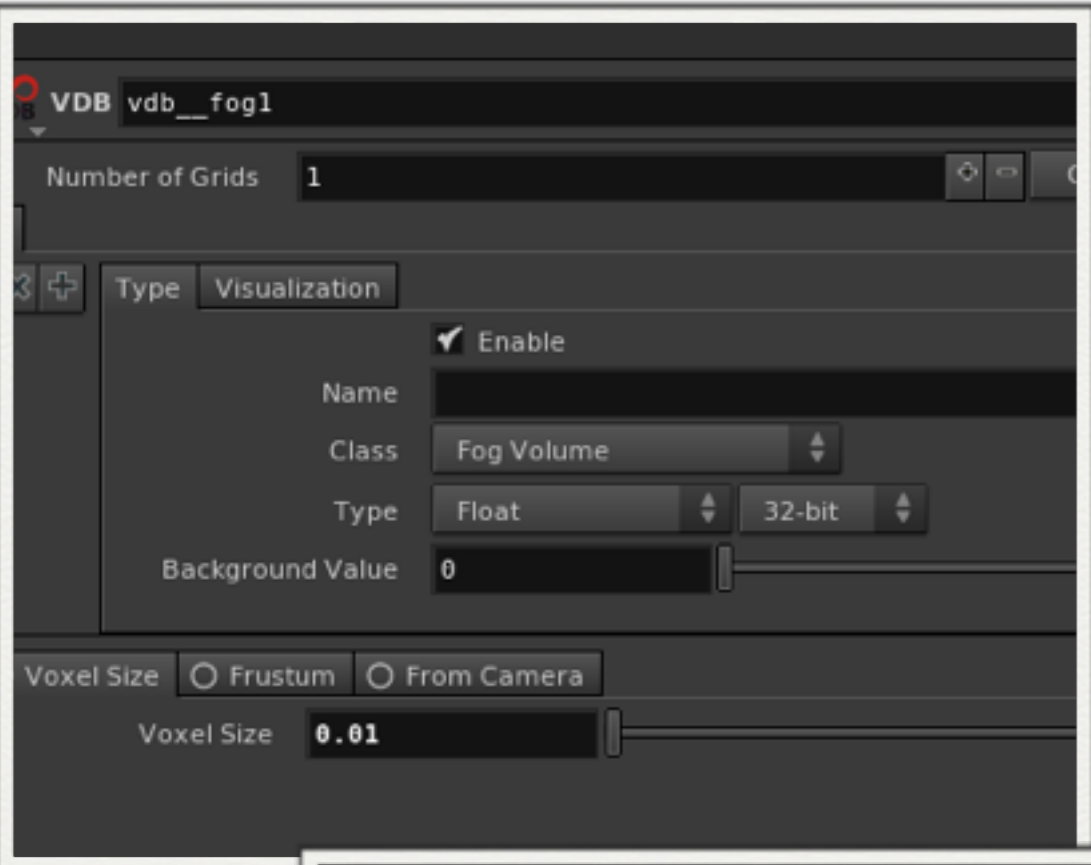
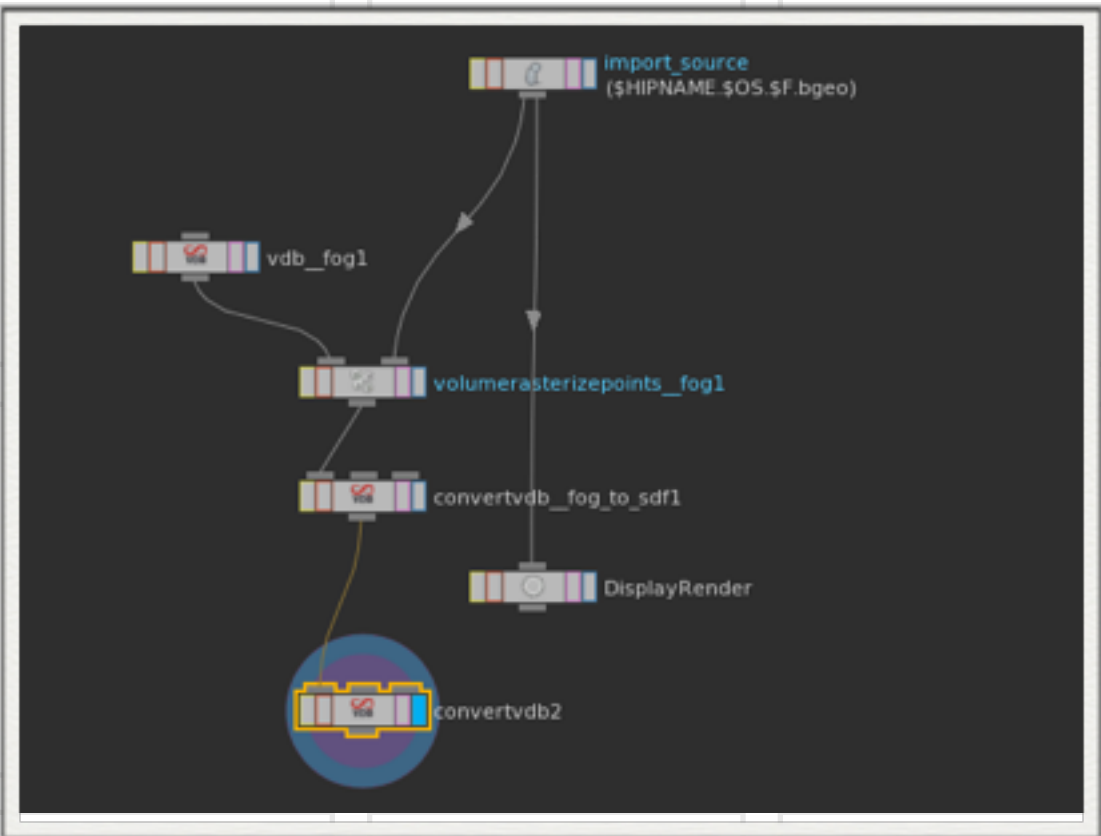
Multisolver-RBDObject



POP Wrangle



Source Particles





End of M08