Paraview GUI commands

Created	@May 18, 2022 10:48 AM
Tags	

How to use Python macro

1. load macro
2. check the macro is added in Paraview. You should see a new button with the name of the macro function on it.
3. press the button and run the macro on Paraview

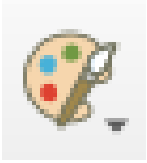
Parameters to adjust

Particle color

https://docs.paraview.org/en/latest/ReferenceManual/colorMapping.html

background color

background, axis grid, etc - you can adjust back ground color by clicking “color palette icon”



particle size

Particle size(radius) can be adjusted by **Radius and Scale Factor in ParaviewGUI**

radius of an ellipsoid = $Radius \times ScaleFactor \times scale$ where scale is given by command line arguments.

#Default values are Radius = 0.5, Scale Factor = 2. Since the product of the default values of Radius and Scale Factor is 1, scale determines the radius of an ellipsoids.

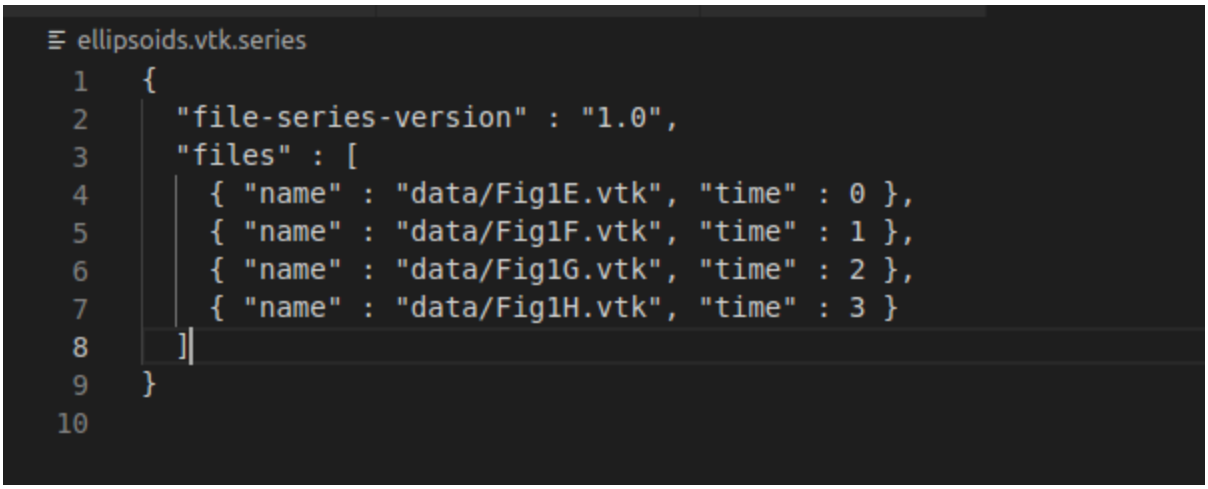
resolution

Resolution defines how many points are used to plot an ellipsoid. There are 2 parameters, theta and phi.

Total number of points on an ellipsoid: $theta \times phi - (phi - 1) \times 2$

Video

To use the “time inspector feature” in Paraview, the file needs to be in vtk.series format. vtk.series is simply a json with the name of the file and the timestep it corresponds to.



The program uses sort() to sort the files in the directory by their names and put them into a vtk.series file in ascending order.

Users can change the order of vtk files, time manually presented in vtk.series.

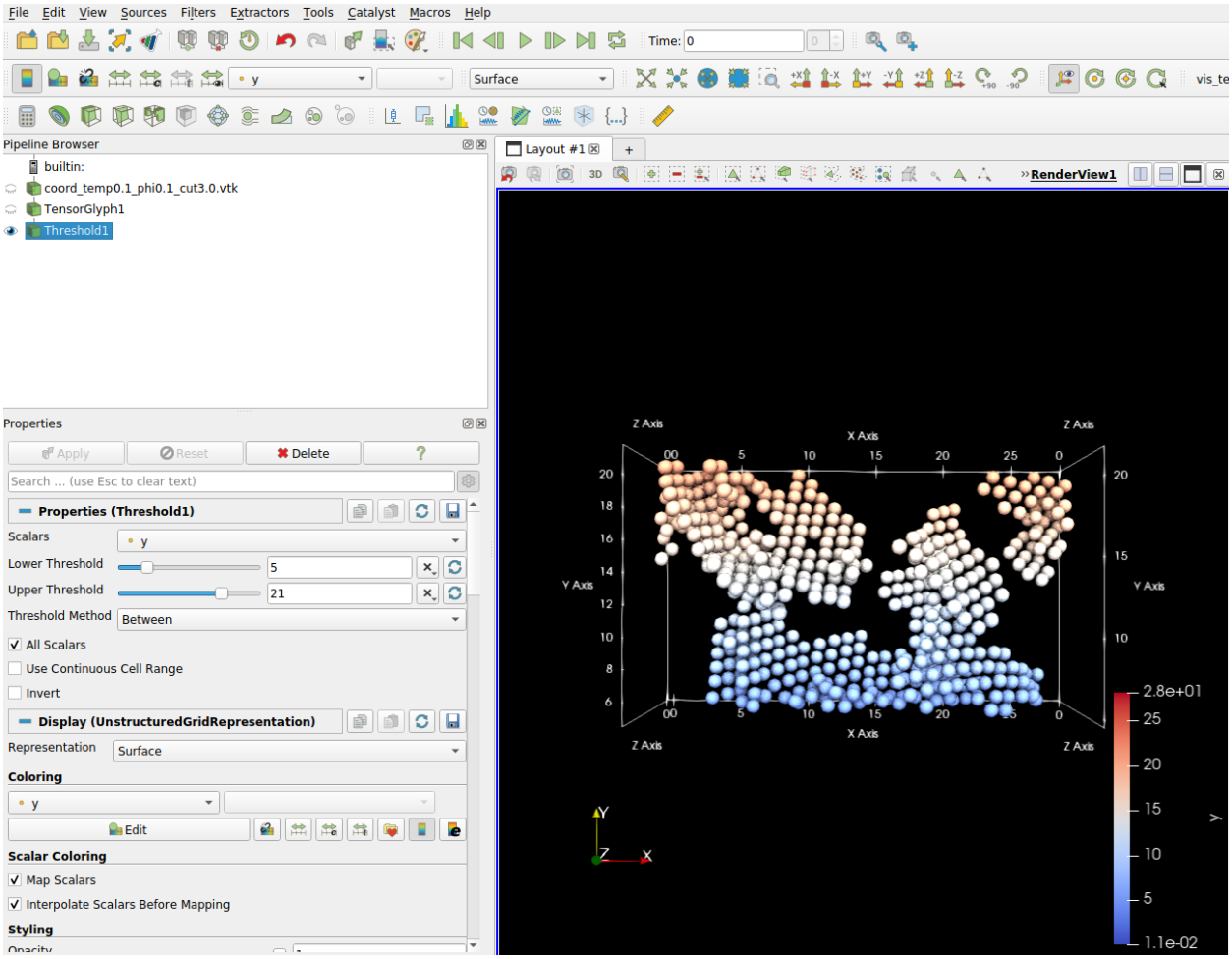
save animation

https://docs.paraview.org/en/v5.8/UsersGuide/savingResults.html#:~:text=To save an animation as,and which format to use.

Thresholding

Users can specify scalar value threshold and visualize some of the particles. The ‘threshold’ icon is on the top left of the paraview GUI

e.g. only visualise particles whose y coordinates are between 5 and 21



Light setting

To visually add an depth of an object in Paraview, users can adjust parameters in ‘Lighting’ and ‘Light Inspector’

The key settings in ‘Lighting’ such as specular, ambient, diffuse are defined in the official documentation

https://docs.paraview.org/en/latest/ReferenceManual/objectShadingProperties.html

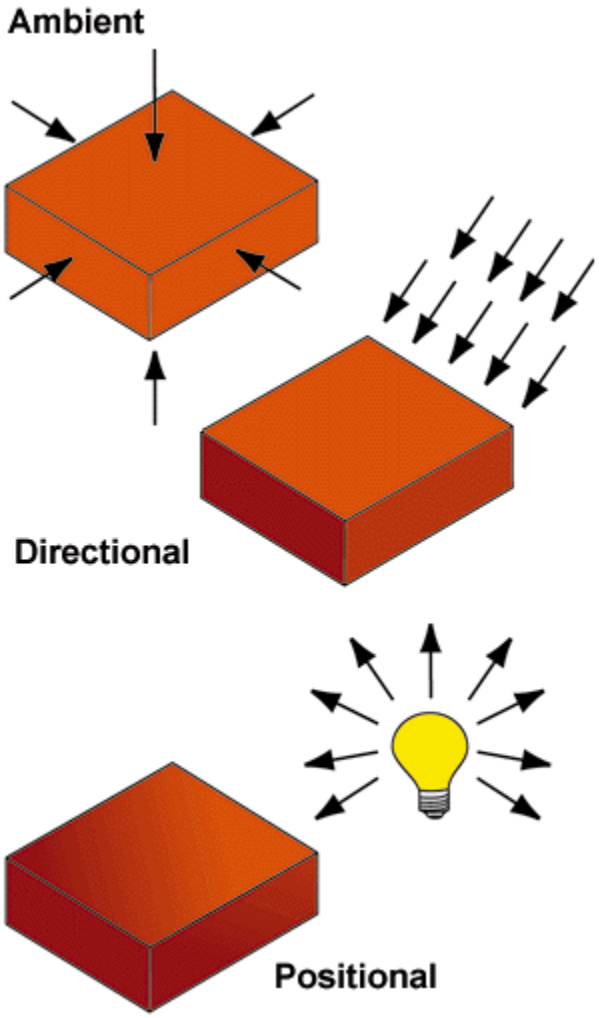


image source: https://www.pcmag.com/encyclopedia/term/ambient-lighting

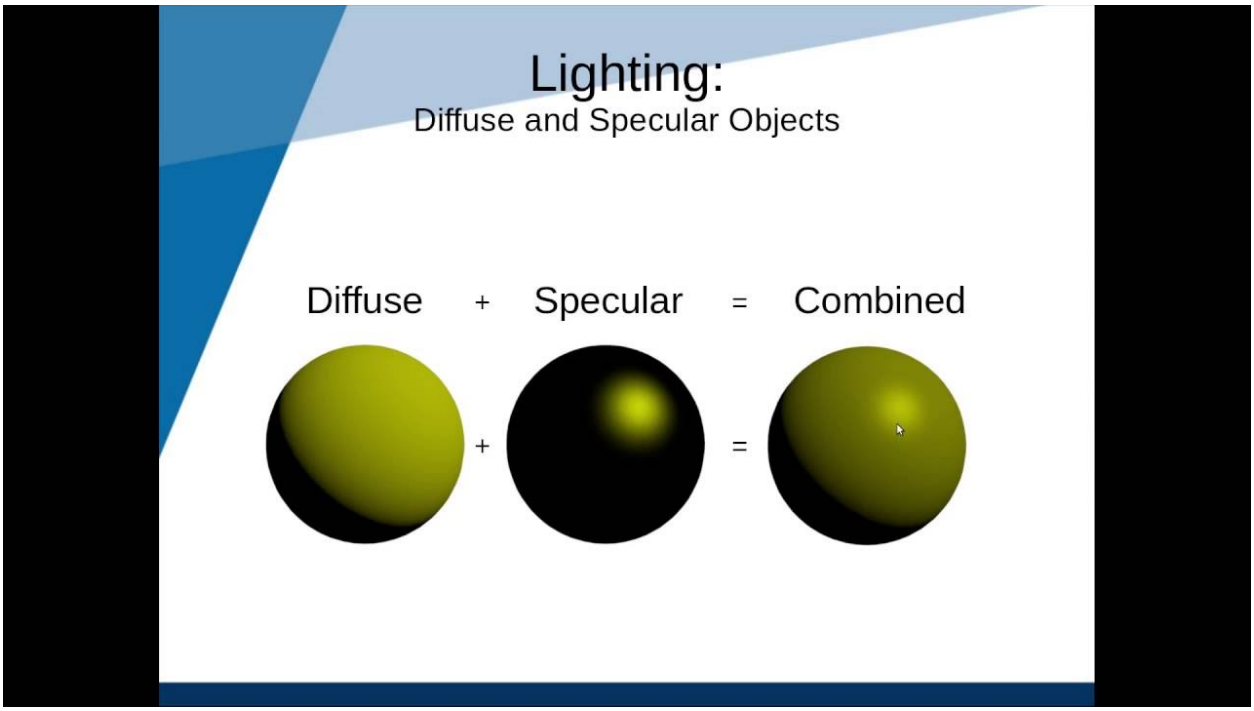
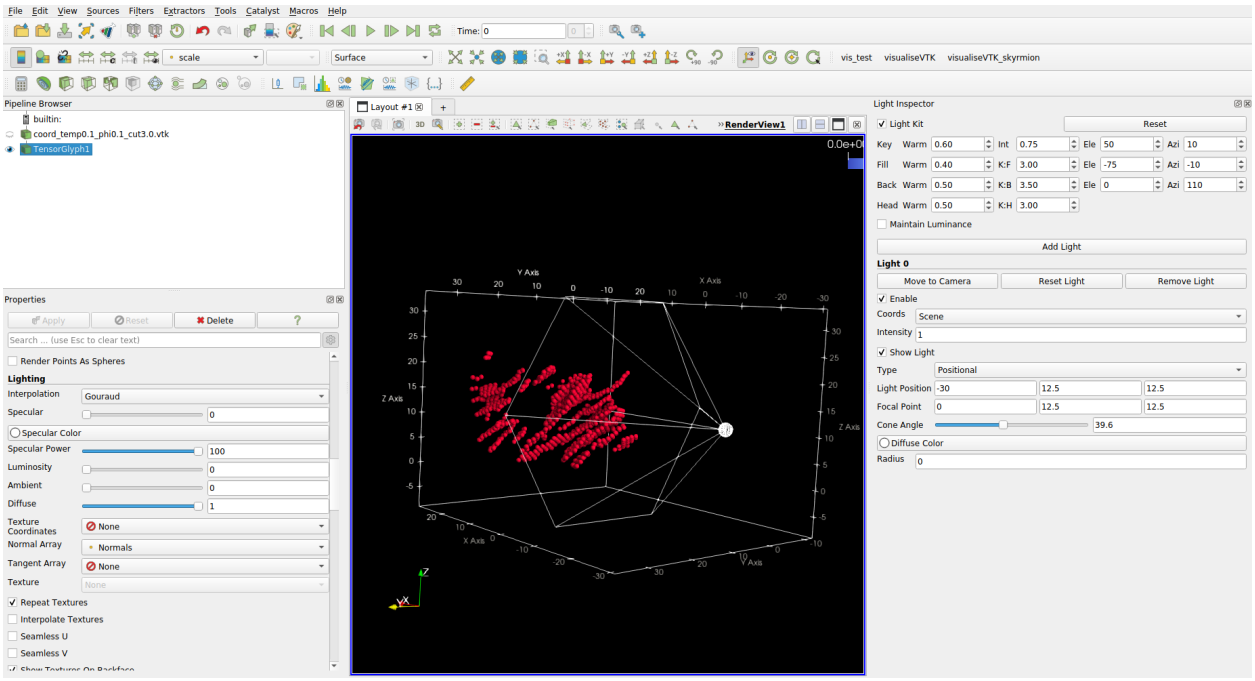


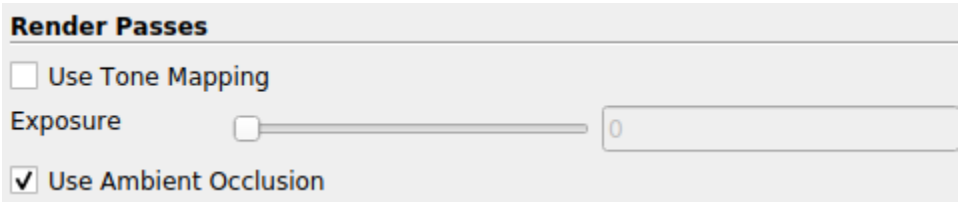
image source: https://www.youtube.com/watch?v=ytgJX2HLDKk

External light sources can also be added using ‘Light Inspector’

As seen in the image below, users are able to adjust light position and type of the light to illuminate objects

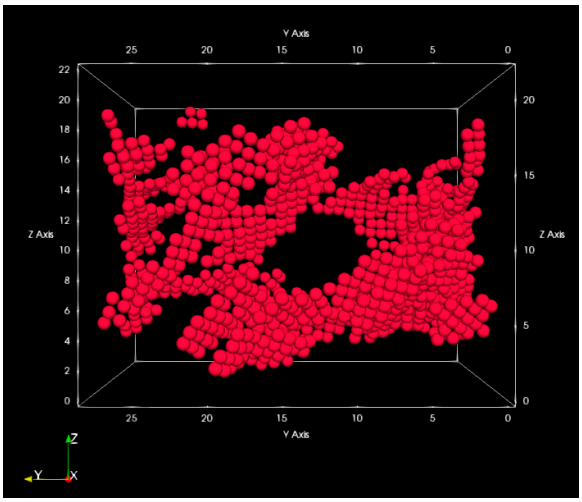


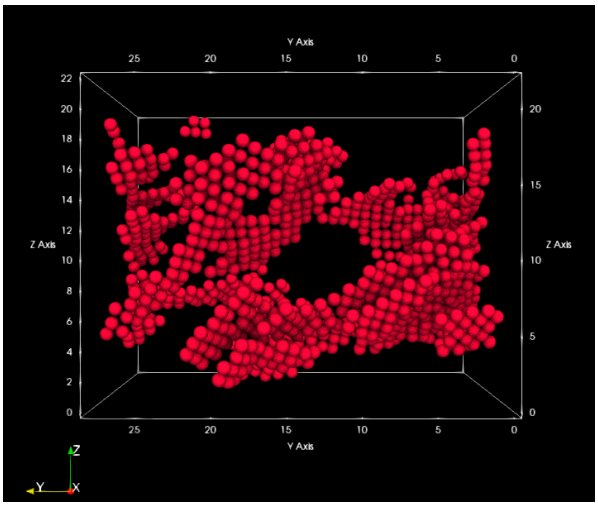
Ambient Occlusion



Ambient occlusion can only utilized when an external light source is added via ‘light inspector’. Ambient occlusion is a type of depth cue which refers to variety of means used to to inform the visual system about the depth of a target or its distance from the observer.

Without(image left) and with Occlusion(image right)


Y Axis
25 20 15 10 5 0
22 20 18 16 14 12 10 8 6 4 2 0
Z Axis
20 15 10 5 0
Z Axis
25 20 15 10 5 0
Y Axis
Z
Y
X


Y Axis
25 20 15 10 5 0
22 20 18 16 14 12 10 8 6 4 2 0
Z Axis
20 15 10 5 0
Z Axis
25 20 15 10 5 0
Y Axis
Z
Y
X