extract particles by planes

Created	@May 18, 2022 2:01 AM
Tags	

Extract line of particles

You can extract a line of particles by specifying plane gradients, origin and width in `run.sh` . The parameters and the width creates 2 planes and only particles whose origins are between the 2 planes are visualized.

Plane parameters and width

a, b, c, d, w, x0, y0, z0

Plane equation

$$a \cdot (x - x0) + b \cdot (y - y0) + c \cdot (z - z0) + d = 0$$

Utilize visualization software “GeoGebra” to check your planes

Define 2 boundaries

Boundary 1

$$a \cdot x + b \cdot y + c \cdot z + d - w/2 < 0$$

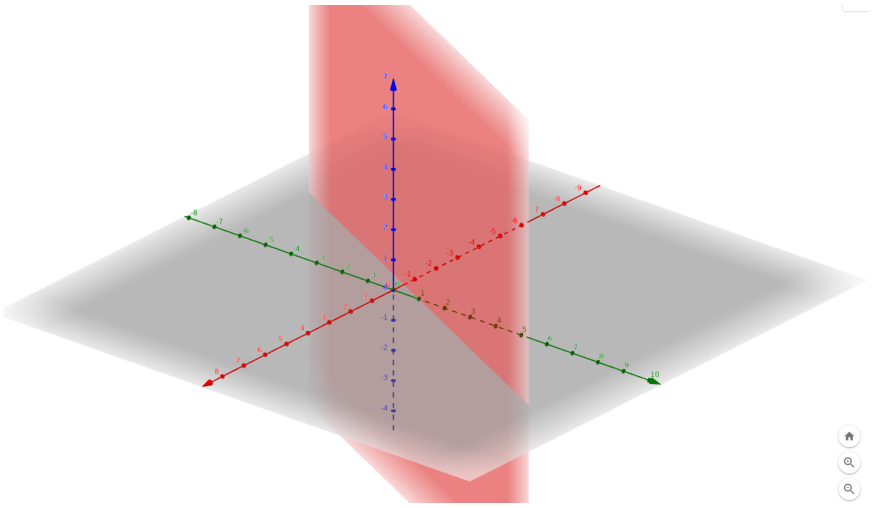
Boundary 2

$$a \cdot x + b \cdot y + c \cdot z + d + w/2 > 0$$

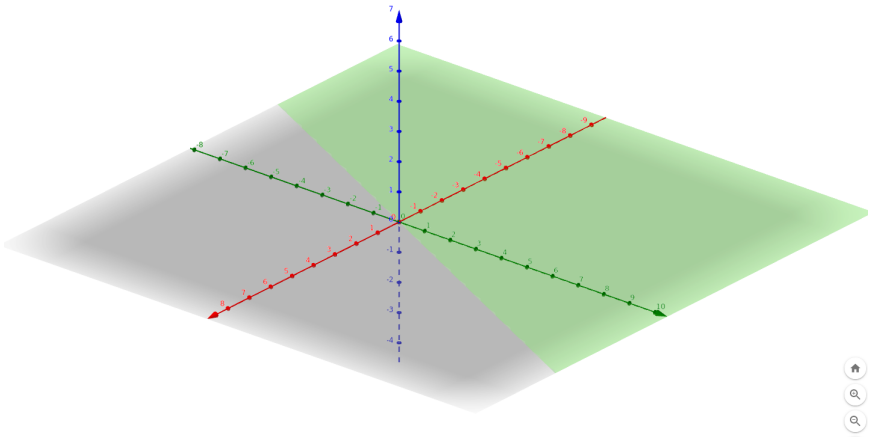
particles with x, y and z satisfying the inequalities above will be assigned “y” in column “visibility” in dataframe

example to extract a particle lying on y = 2x + 1 with w(width) = 1

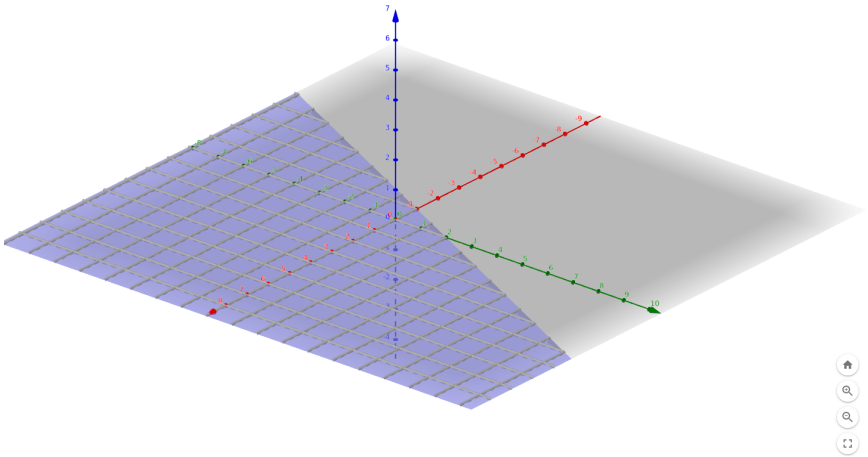
Plane y = 2x+1



Boundary1: 2x -y +1 -1/2 < 0



Boundary1: 2x -y +1 +1/2 > 0



command to run

```
python pipeline.py --input_dir <> --plane_grad 2 -1 0 1 --plane_width 1
```

visualise the output vtk file in Paraview