Running the Cantilever Beam Simulation

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Open Cantilever Beam Example

- Using the shortcut you previously created, navigate to the tutorial shortcut -> LIGGGHTS_Flexible_Fibers -> examples -> BondPackage -> Tutorials -> Single_Tests -> cantilever_beam
- Open in.liggghts
- The actual script starts at the command "atom_style hybrid granular bond/gran …"
- All lines before this simply make the file easier to read

Structure of the Input File

- Input files are structured as followed
  - Atom definition
  - Domain definition
  - Physics definition
  - Atom property declaration
  - Simulation definition

- These files can be very powerful but special care is needed

Running the Example

- A input script can be ran by running the following command liggghts –in in.liggghts
- LIGGGHTS will now read and interpret your input script

Running the Example

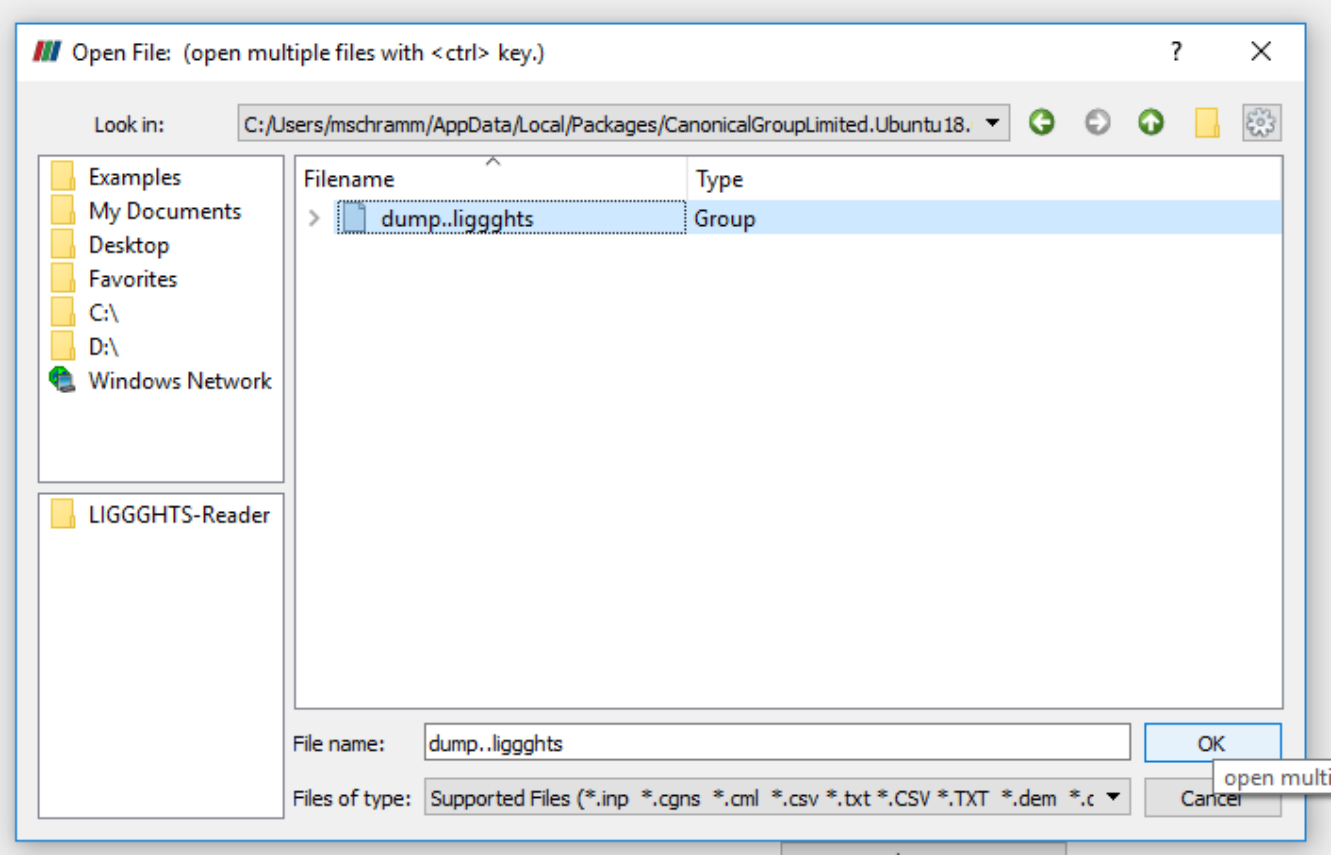
```
 2194611       54       53    0.021100963      38.339102     0.57059422   -0.020250331     -1.0282217  3.5666568e-05
 2205012       54       53    0.021200968      38.491927     0.38860071   -0.020353157     -1.0281883  3.5697118e-05
 2215413       54       53    0.021300973      38.645399     0.20688452   -0.020455979     -1.0281619  3.5723861e-05
 2225814       54       53    0.021400977      38.796726    0.025430899   -0.020558799     -1.0281424  3.5746862e-05
 2227273       54       53    0.021415005      38.818042              0   -0.020573221     -1.0281401  3.5749797e-05
Loop time of 38.8183 on 1 procs for 2227272 steps with 54 atoms, finish time Tue Dec  4 20:08:17 2018


Pair  time (%) = 10.7445 (27.679)
Bond  time (%) = 13.8236 (35.6111)
Neigh time (%) = 0.004285 (0.0110386)
Comm  time (%) = 0.663688 (1.70973)
Outpt time (%) = 0.329767 (0.849515)
Other time (%) = 13.2524 (34.1396)

Nlocal:    54 ave 54 max 54 min
Histogram: 1 0 0 0 0 0 0 0 0 0
Nghost:    0 ave 0 max 0 min
Histogram: 1 0 0 0 0 0 0 0 0 0
Neighs:    53 ave 53 max 53 min
Histogram: 1 0 0 0 0 0 0 0 0 0

Total # of neighbors = 53
Ave neighs/atom = 0.981481
Ave special neighs/atom = 0
Neighbor list builds = 44
Dangerous builds = 0
Setting up run at Tue Dec  4 20:08:17 2018

Memory usage per processor = 15.902 Mbytes
    Step     Atoms  numbond       sim_time           CPU        CPULeft            pz            vz         KinEng
 2227273       54       53    0.021415005             0              0   -0.020573221     -1.0281401  3.5749797e-05
 2236215       54       53    0.021500982      0.123267      35.720287   -0.020652297     -0.82623467 3.0710878e-05
 2246616       54       53    0.021600986      0.283045       37.76467   -0.020725337     -0.64019542 2.5913356e-05
 2257017       54       53    0.021700991      0.451299      38.999917   -0.020781303     -0.48312119 2.1816807e-05
```

Looking at the Results

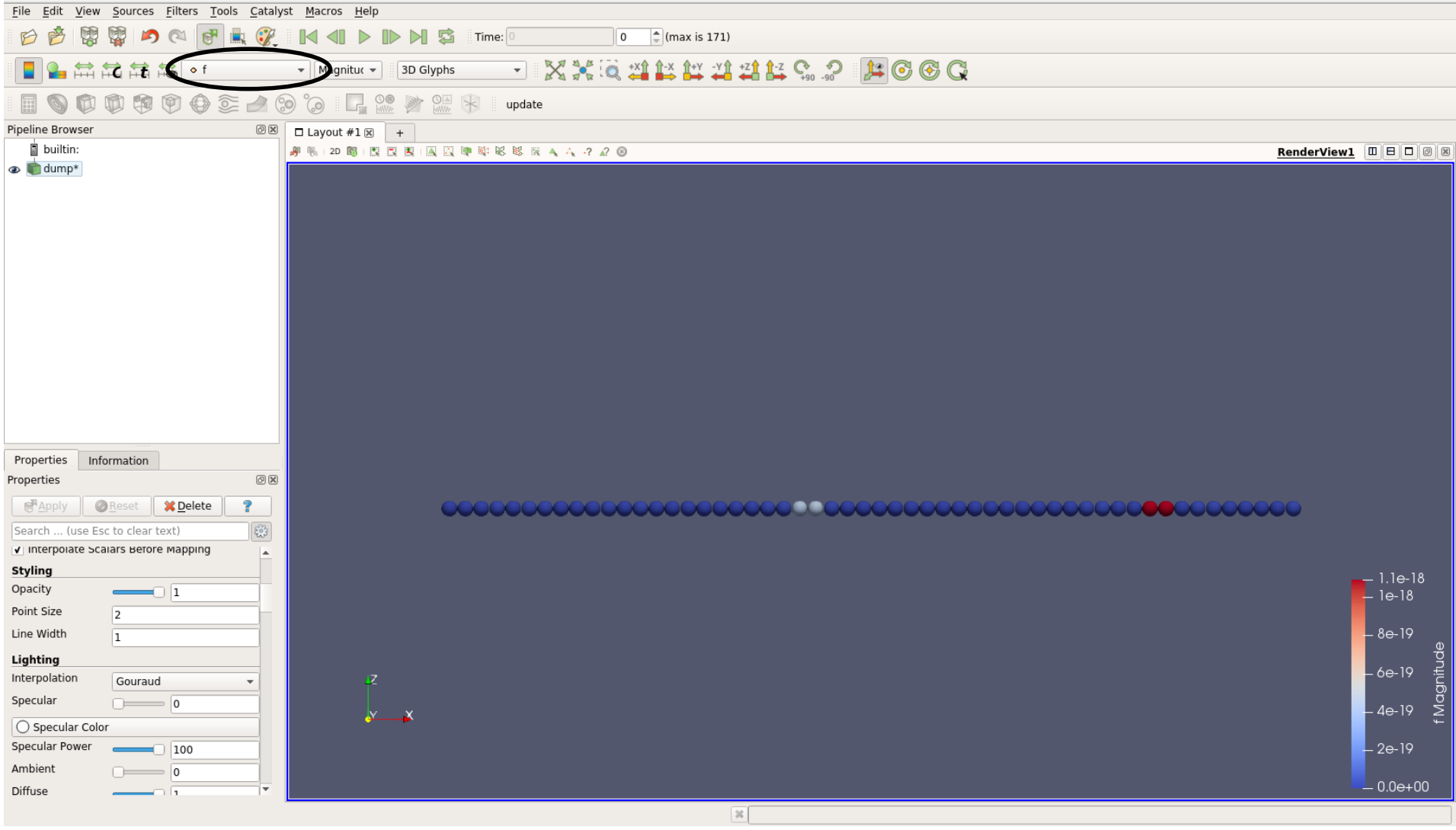
- Notice that new files have been created in the directory you are in (by typing “ls *” and “ls post/*”
- These new files are what we want to look at
- Use paraview to view the simulation
- Use Matlab to view the “beam.csv” file

Paraview

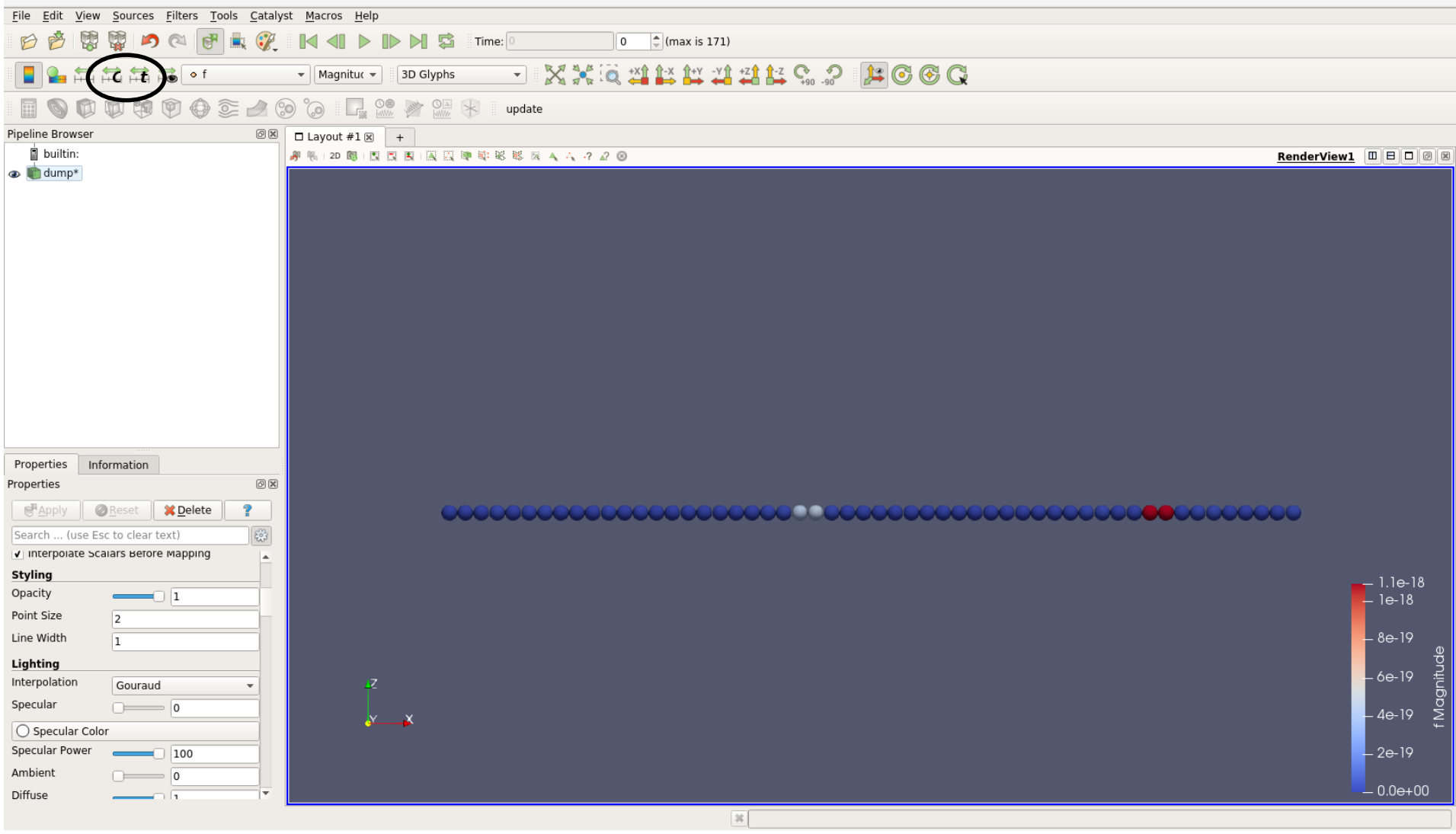
- Open the dump..liggghts file



Show Particle Forces



Rescale Particle Forces



Watch Forces Over Time