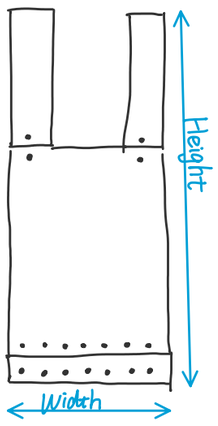
Mesh and Mapping

Saturday, September 12, 2020 10:45 PM



Stored in memory:

Mesh node • (i,j)

node position (x_i, z_j)

node material $mat(i,j)$

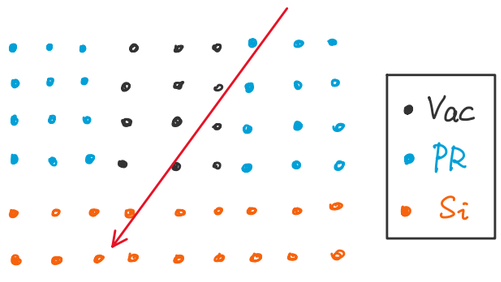
The interface & surface are not stored

Resolution = dist btw 2 nodes

# of nodes = width/res

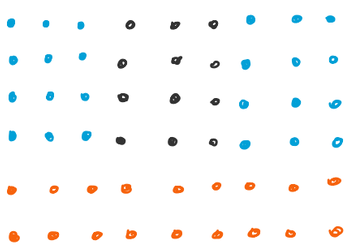
node position is at half res

In the view of particle e.g. (a.5, b.5)

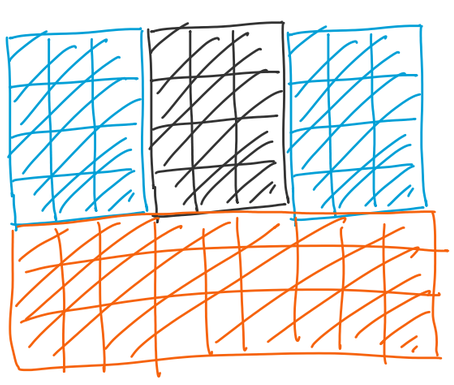


Plot

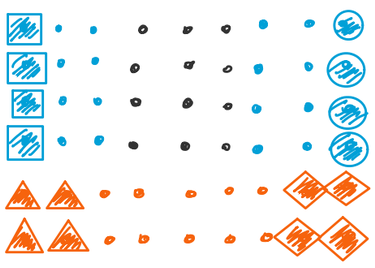
① point plot



② Image plot

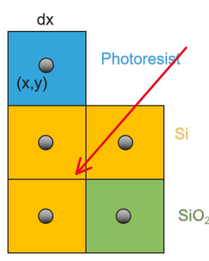


③ Shape plot



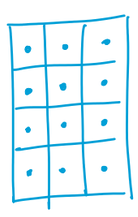
Volume of nodes

① Dense Material



When particle enters the "material block" it will hit the node

ptcl is mapped to the nearest node

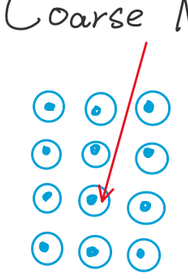


assume particle position (x, z)

Particle hits the node at

$(\tilde{i}, \tilde{j}) = round((x, z))$

② Coarse Material



Particle is able to penetrate into mat since the node volumes do not Overlap.

i) Find the nearest node $(\tilde{i}, \tilde{j})$

ii) calc the dist btw node $(\tilde{i}, \tilde{j})$ and ptcl position (x_i, y_i)

iii) dist $> r$ ⟶ no hit

dist $< r$ ⟶ Yes hit