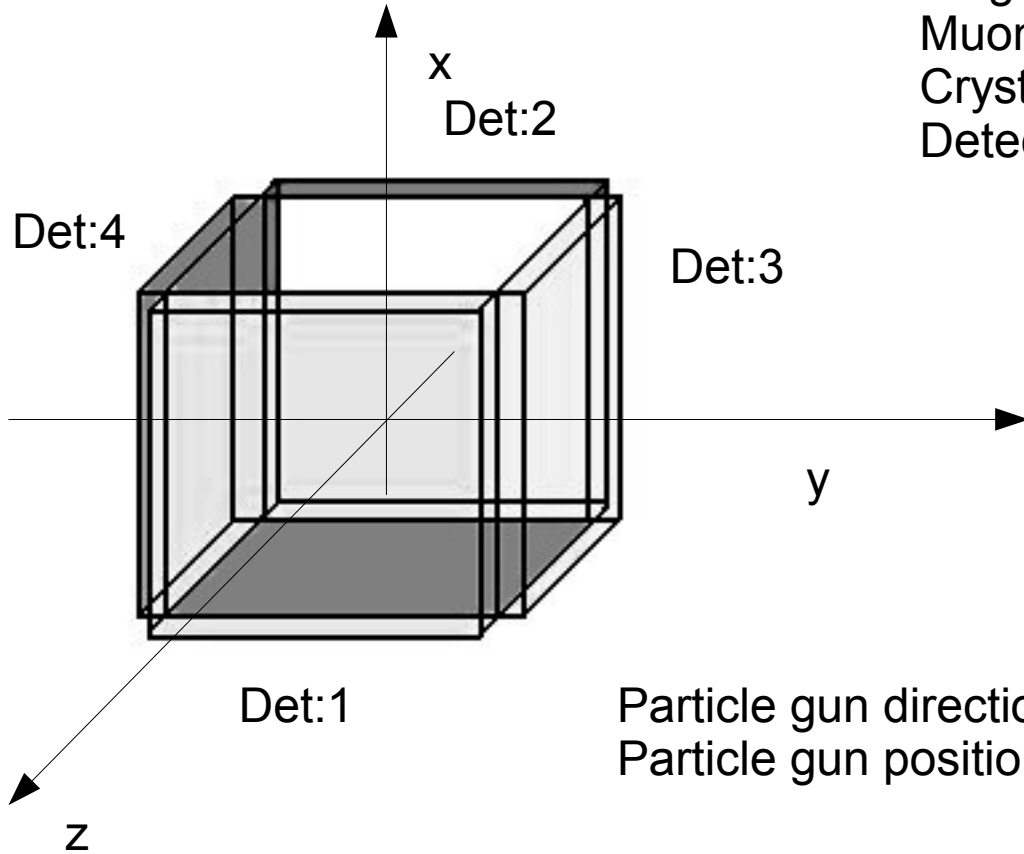# Measuring the deposited energy inside the crystal volume by a MIP (muon) directly

· Sensitizing the Crystal Volume

· Measuring the Deposited Energy by the passing particles

· Comparing the measured energy by the detectors to the deposited energy

·Making the code convenient for making multi-crystal detector simulations
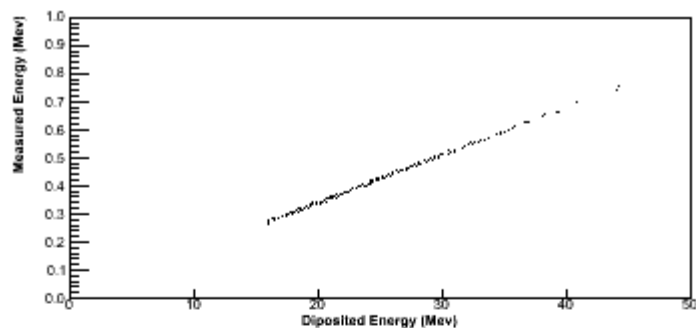
Savvas Kyriacou
Yiannis Makris

Measuring the deposited energy inside the crystal volume by a MIP (muon) directly

The Detector Geometry

Single muon(-) beam
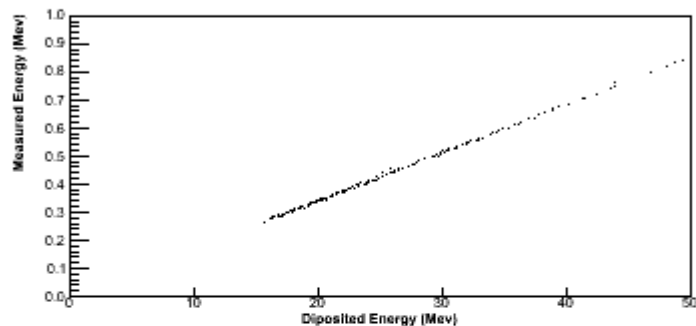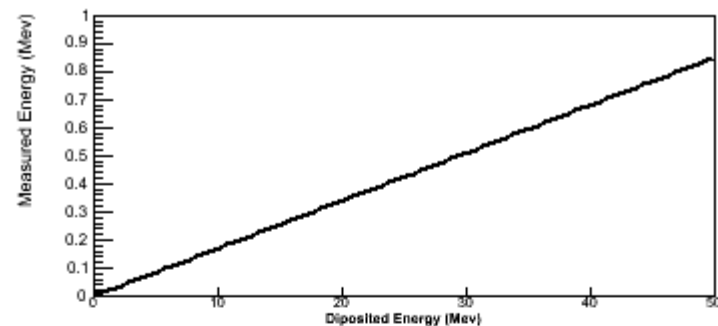Muon energy : 10GeV
Crystal: BGO
Detectors : 4

x
Det:2
Det:4
Det:3
y
Det:1
z

Particle gun direction: 1,0,0
Particle gun positions(4): x= -1 ,   y = 0,0.25,0.50,0.75, z =1
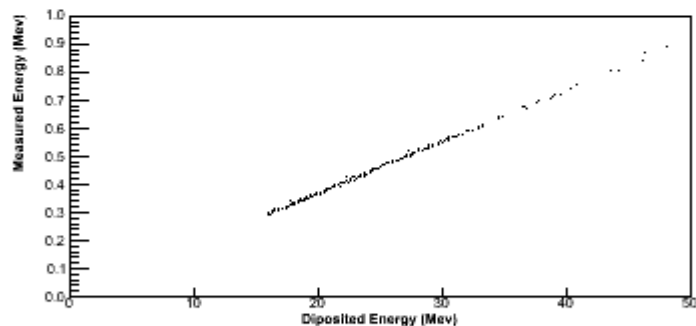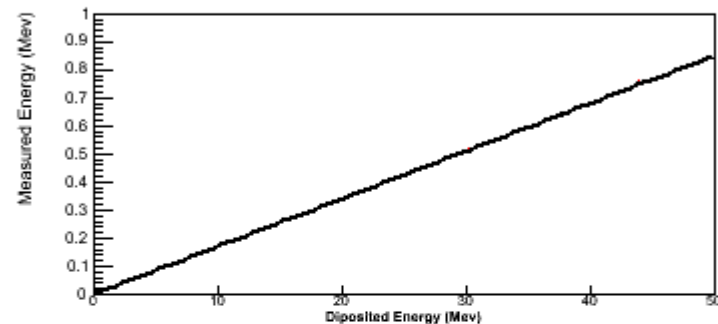
Savvas Kyriacou
Yiannis Makris

y=0mm

Fit parameters:
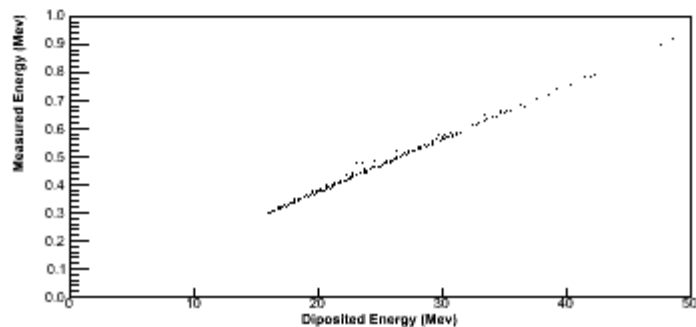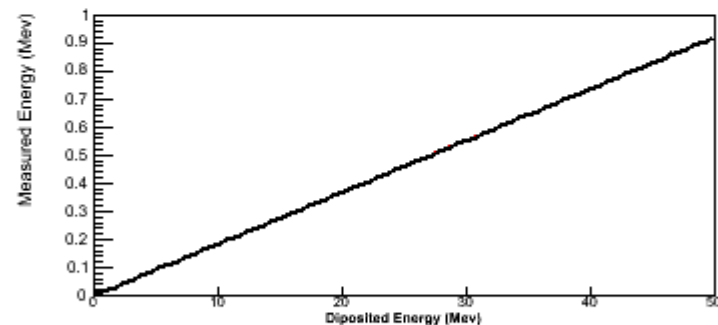p0: -0.000507654 +/- 1.59627e-09
p1 0.0170326 +/- 5.81798e-11

y=2.5 mm

Fit parameters:
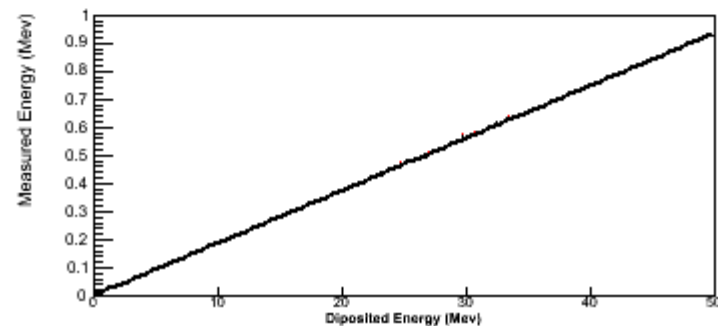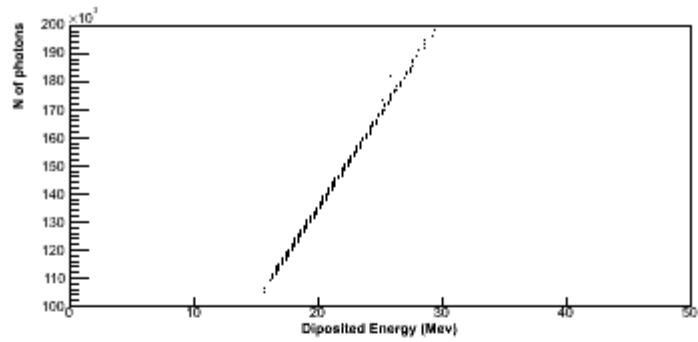p0: 0.000849387 +/- 1.19897e-09
p1   0.0170059 +/- 4.29817e-11

y=5 mm

Fit parameters:
p0: -0.000607821 +/- 1.64151e-09
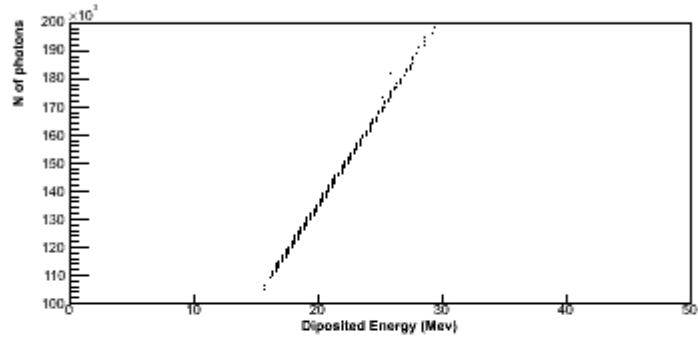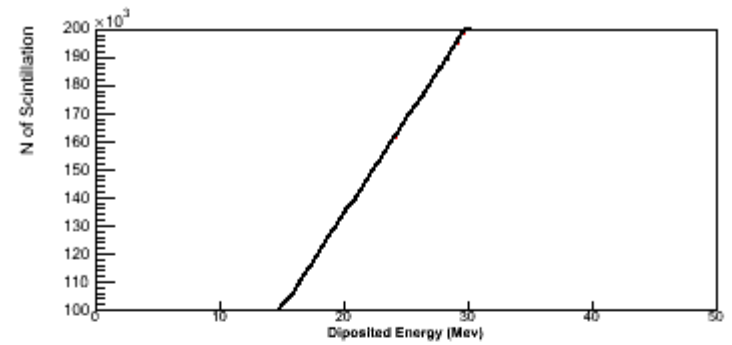p1: 0.0184377+/-5.86494e-11

y=7.5 mm

Fit parameters:
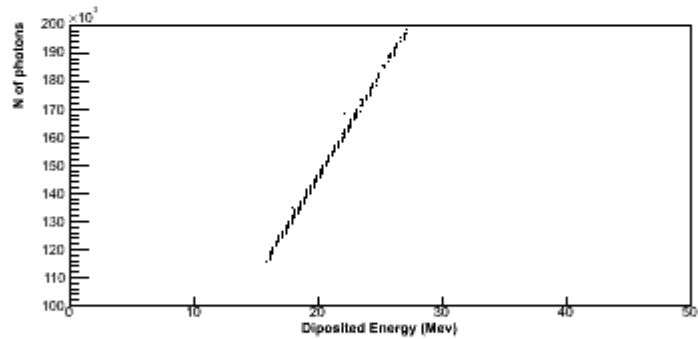p0: 0.00152324 +/- 1.28731e-09
p1: 0.0187177 +/- 4.88462e-11

y=0mm

Fit parameters:
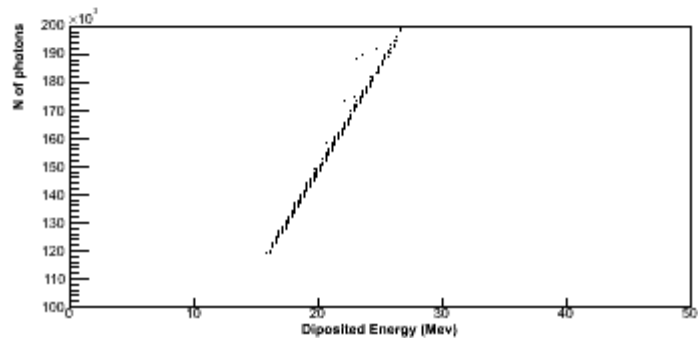p0:` 30.8717   +/- 116.93
p1 6721.02   +/-   5.67774

y=2.5 mm

Fit parameters:
p0: 846.359   +/- 130.533
p1: 6697.51   +/- 6.33891

y=5 mm

Fit parameters:
p0: 231.425   +/-   156.884
p1: 7275.41   +/- 7.70903

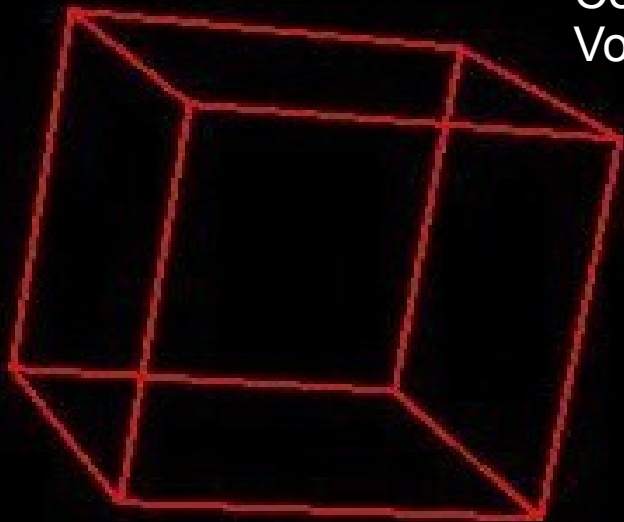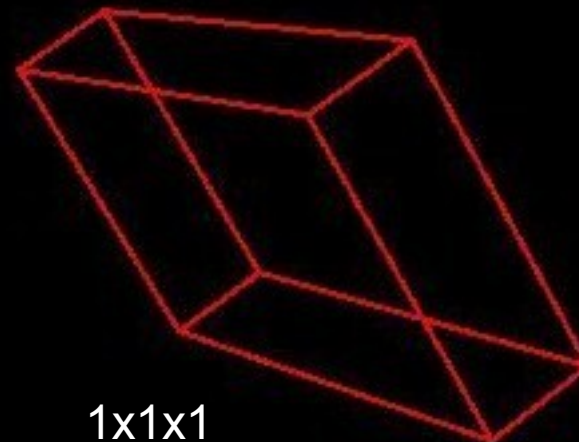**y=7.5 mm**

Fit parameters:
p0:-132.136   +/-   184.319
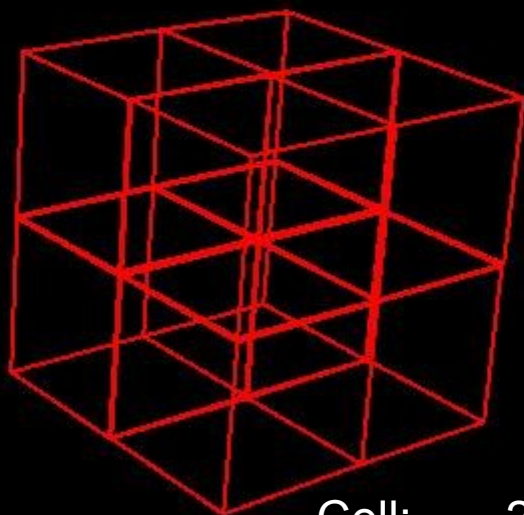p1: 7423.79   +/-   9.3675

Making the code convenient for making
multi-crystal detector simulations
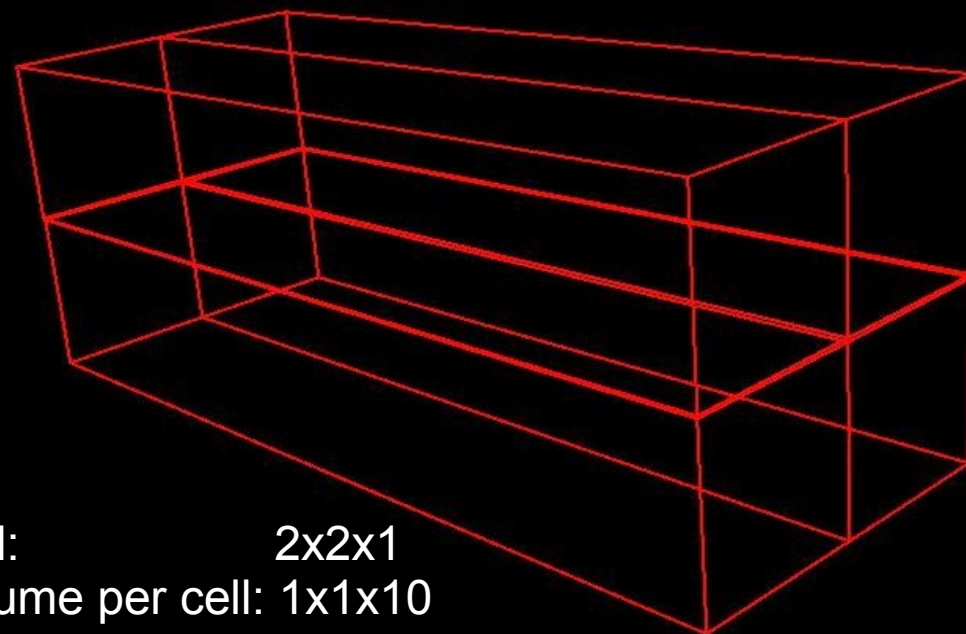
Cell: 1x1x1
Volume per cell: 2x2x2

Cell: 1x1x1
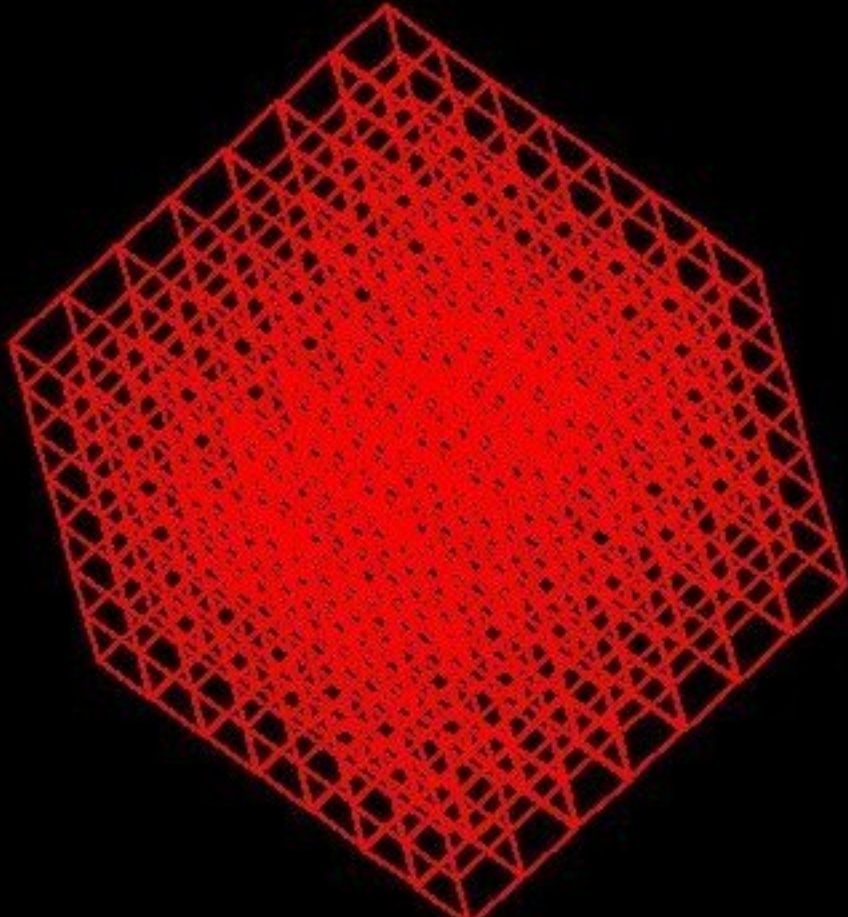Volume per cell: 1x4x6
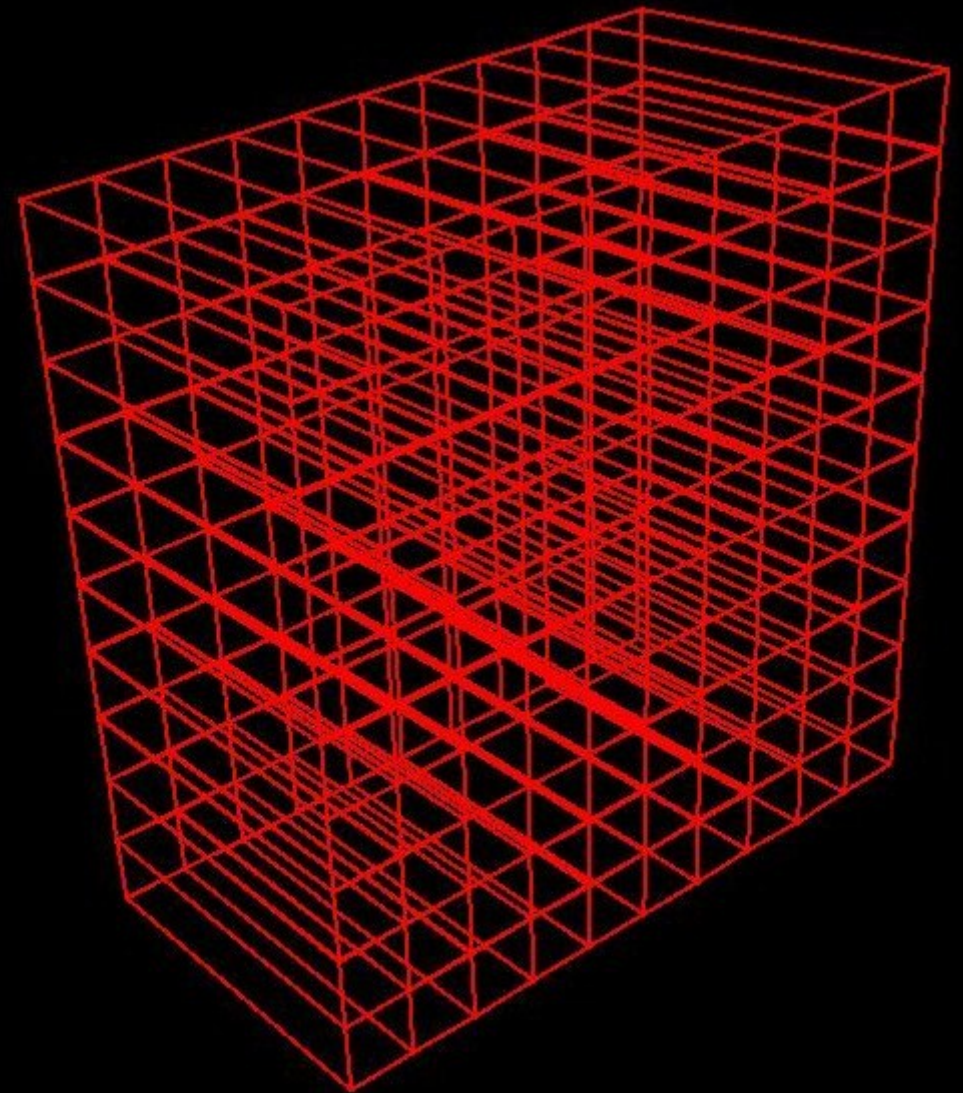
Cell: 2x2x2
Volume per cell: 1x1x1

Cell: 2x2x1
Volume per cell: 1x1x10

Making the code convenient for making
multi-crystal detector simulations

Cell: 7x7x7
Volume per cell: 1x1x1

Cell: 10x10x1
Volume per cell: 2x2x10