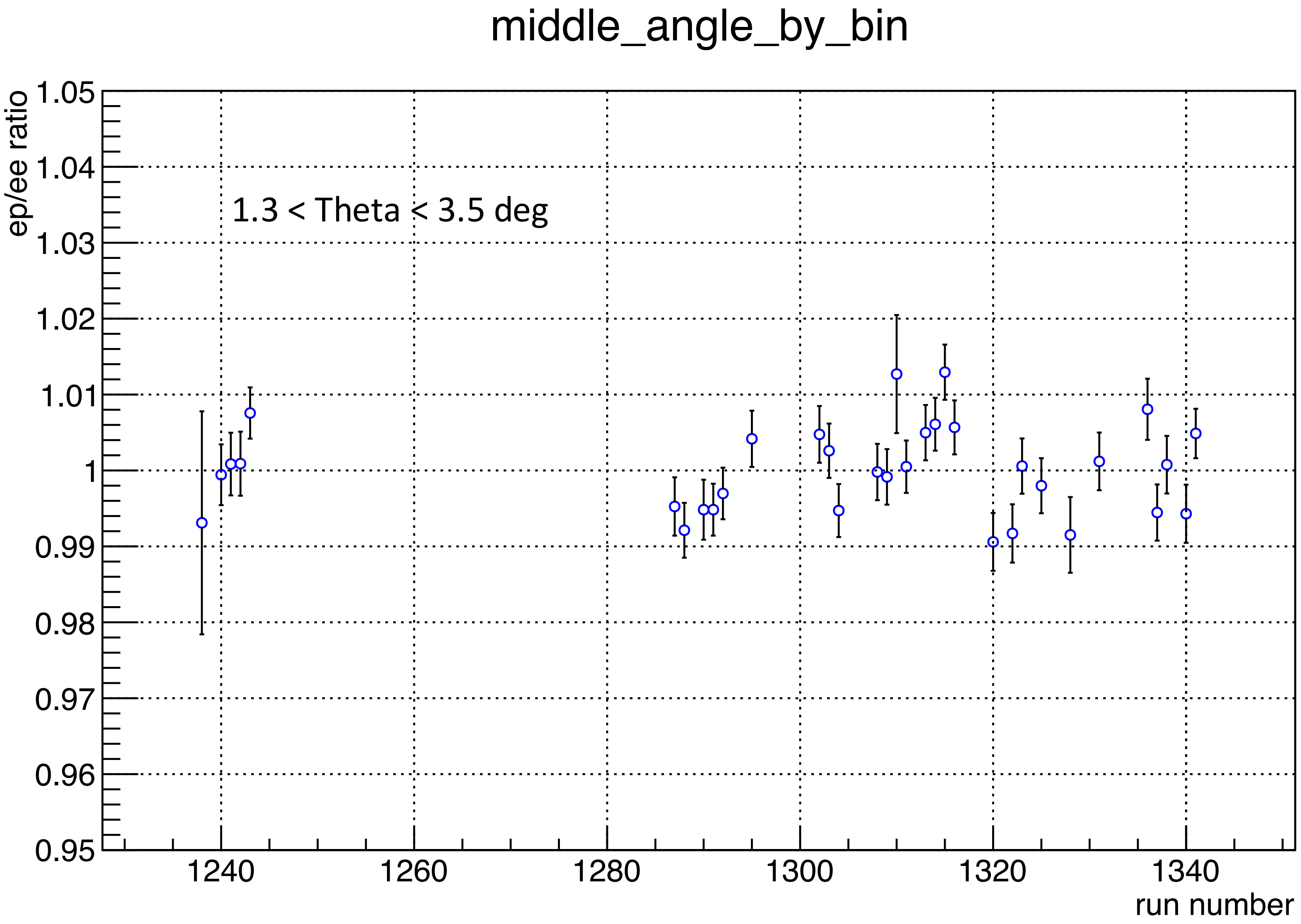
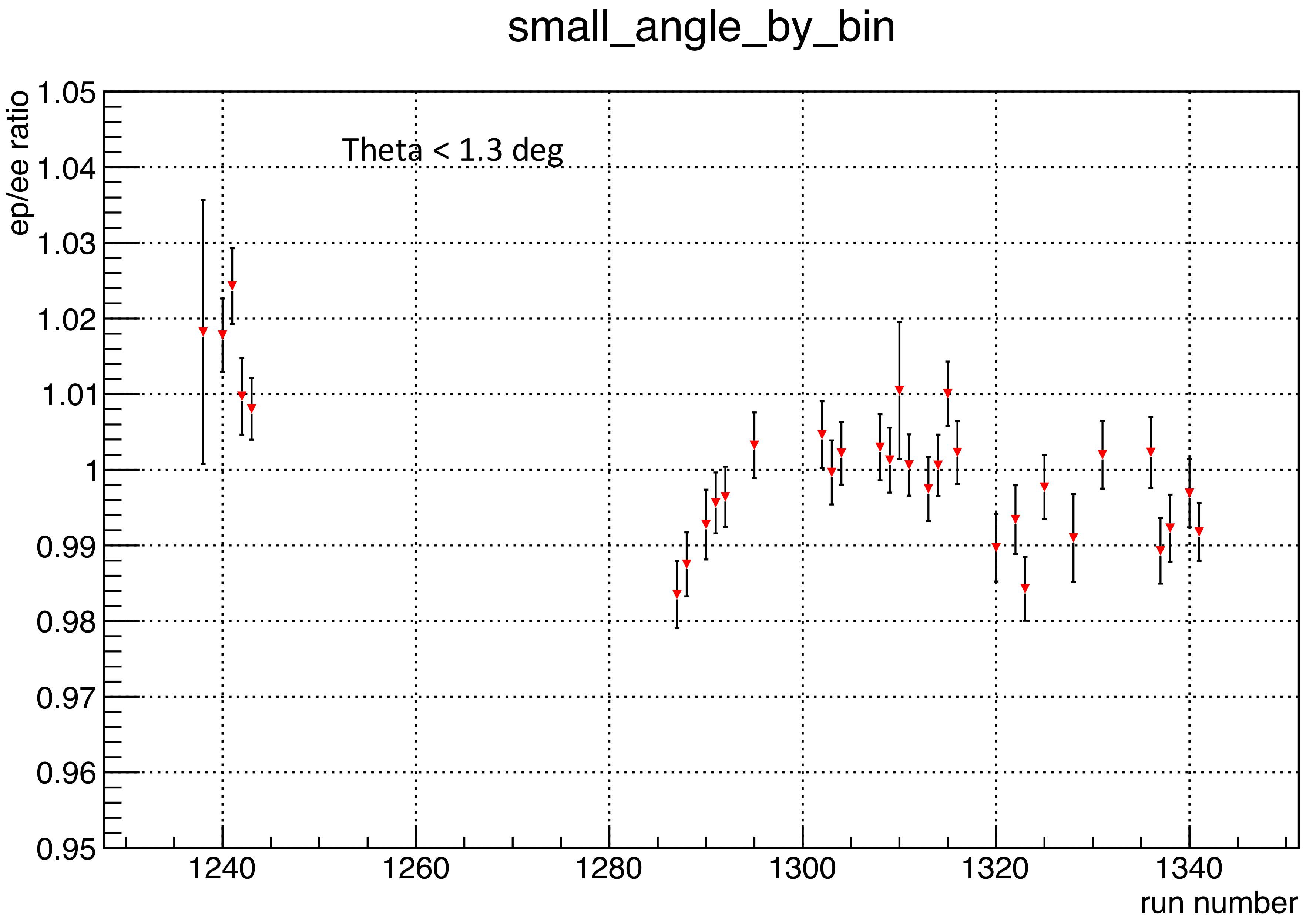
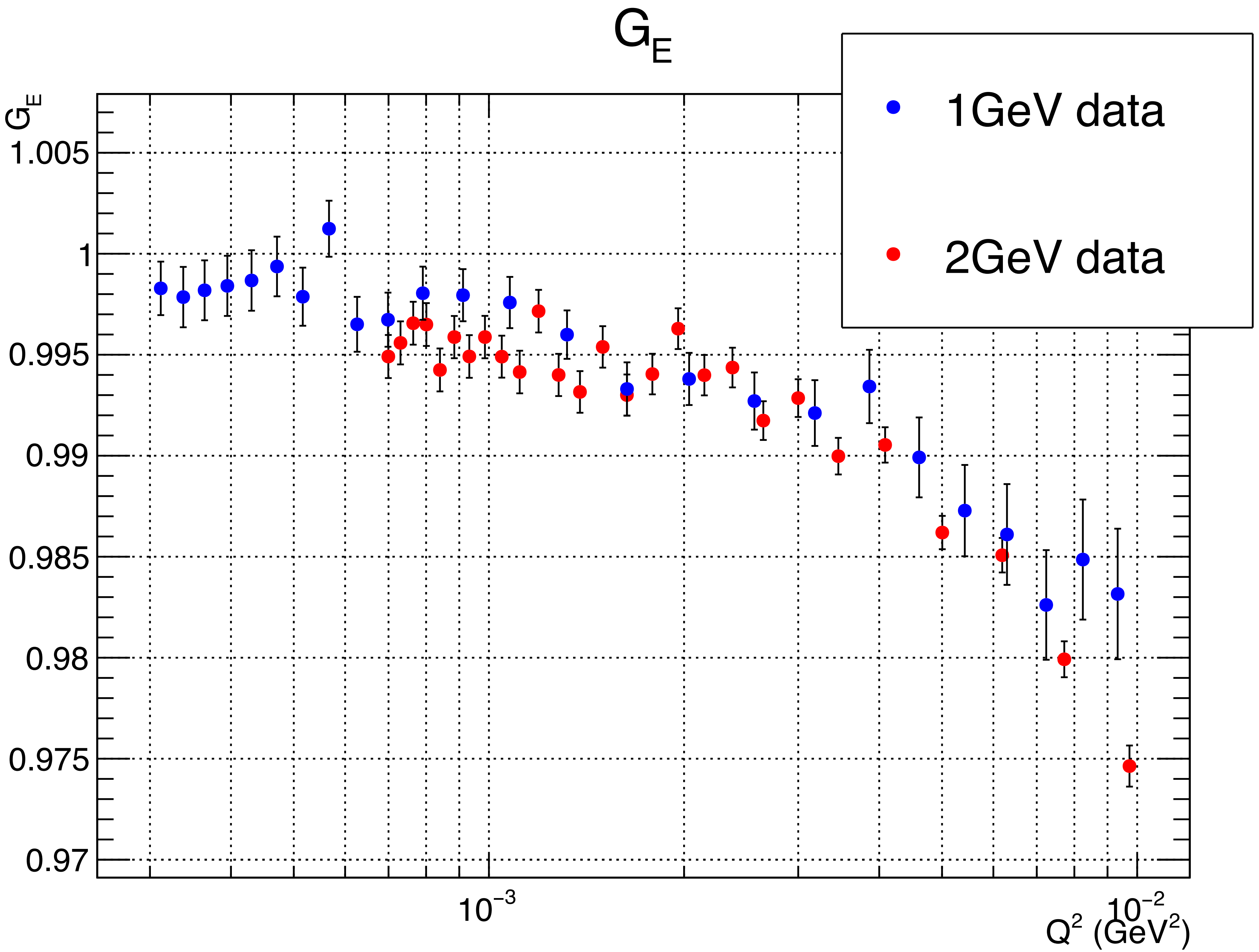
ep/ee ratio by run for the 1GeV runs



ep/ee ratio by run for the 1GeV runs



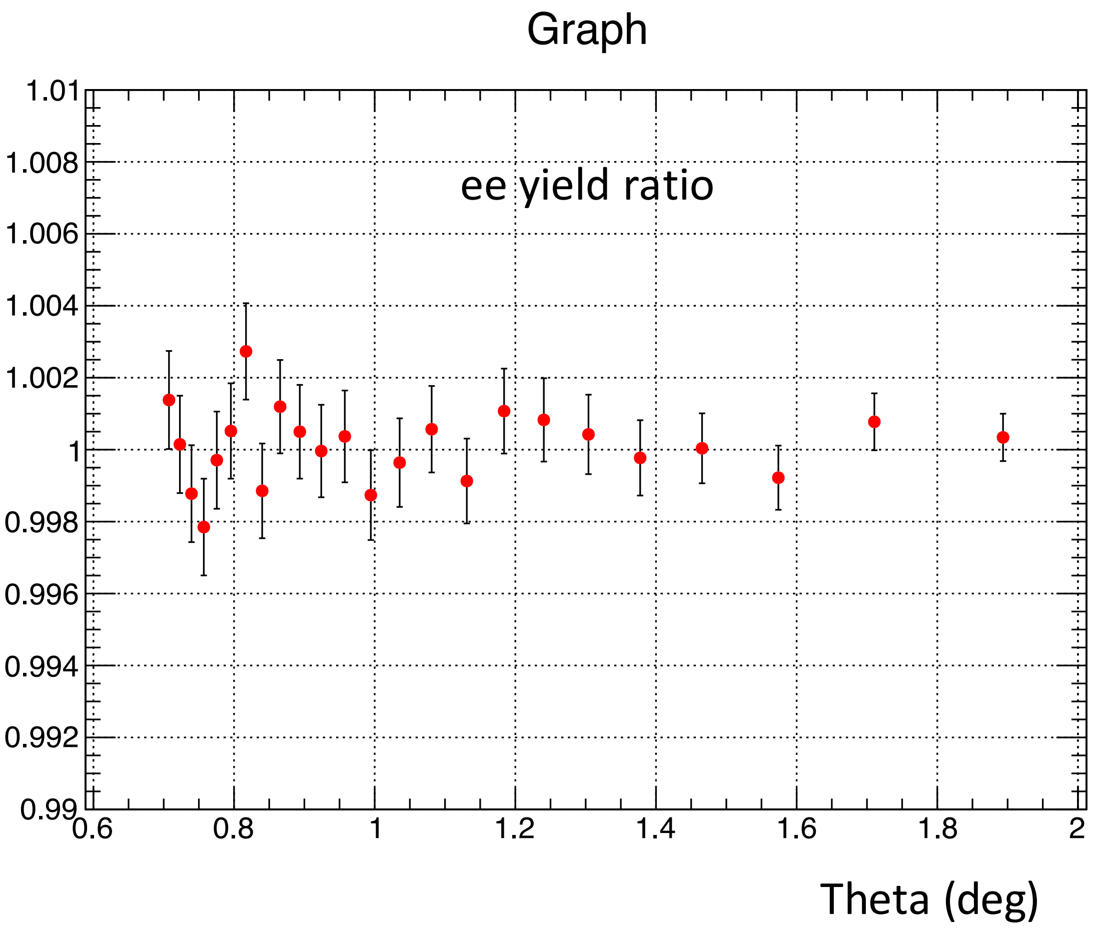

G_E
G_E
1.005
1
0.995
0.99
0.985
0.98
0.975
0.97
10^-3
10^-2
Q^2 (GeV^2)
1GeV data
2GeV data

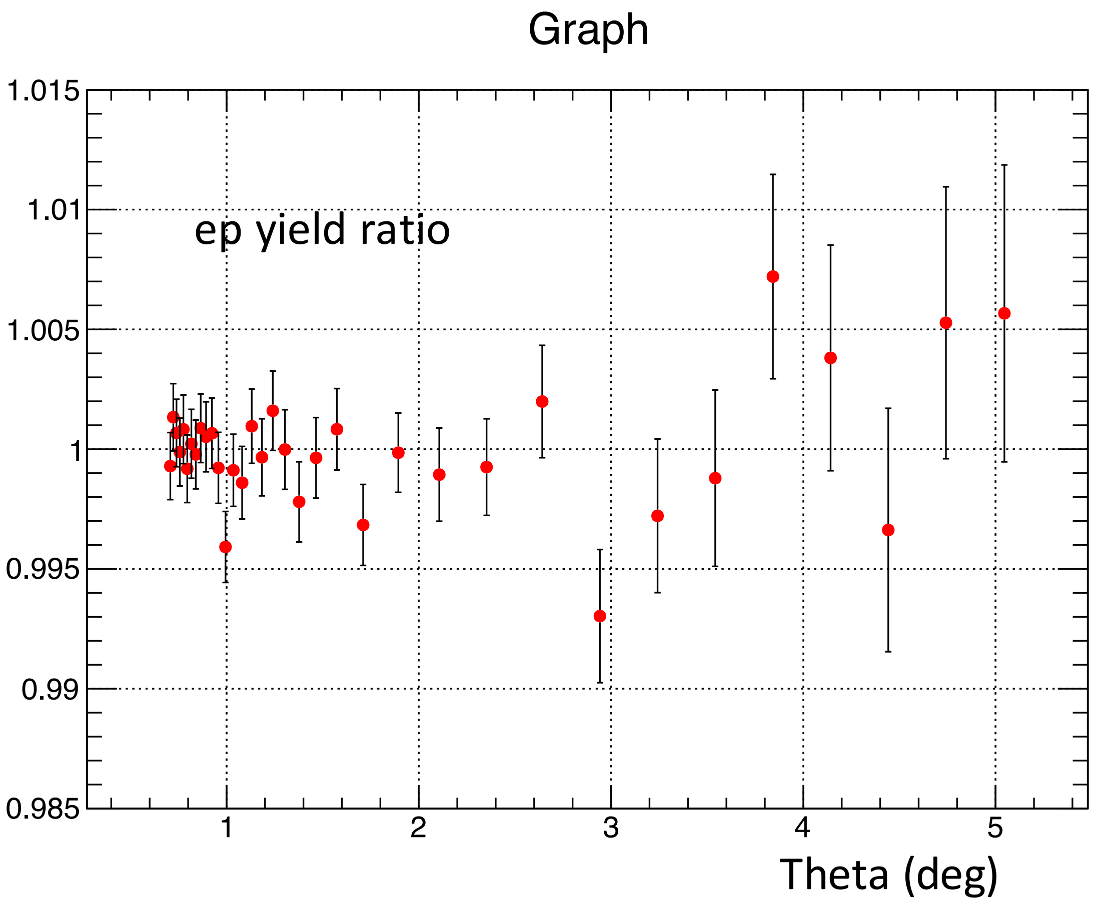
Effect of extended target

- In the simulation we assume the vertex z is uniform distributed along +/- 2cm of target center
- From last week we saw that ep/ee ratio is rather sensitive on z between detector and vertex (which we don't really know other than assume it comes from target center)
- I compared the ep and ee yield as a function of angle for the following four cases:
  - Uniform distributed within +/- 2 cm
  - Uniform distributed whtin +/- 0.5 cm
  - Point like at the upstream edge
  - Point like at the downstream edge

40mm long target vs 10mm long target

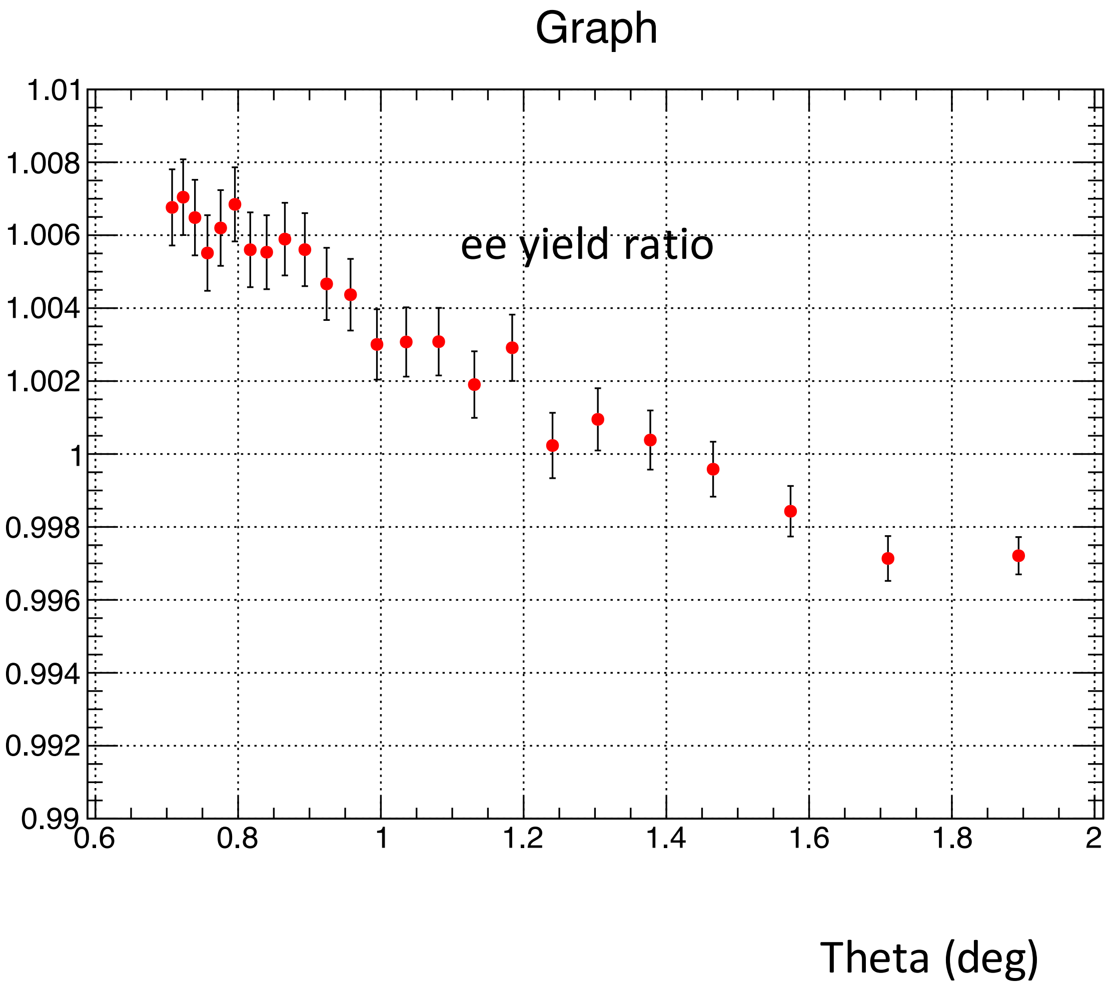
2GeV

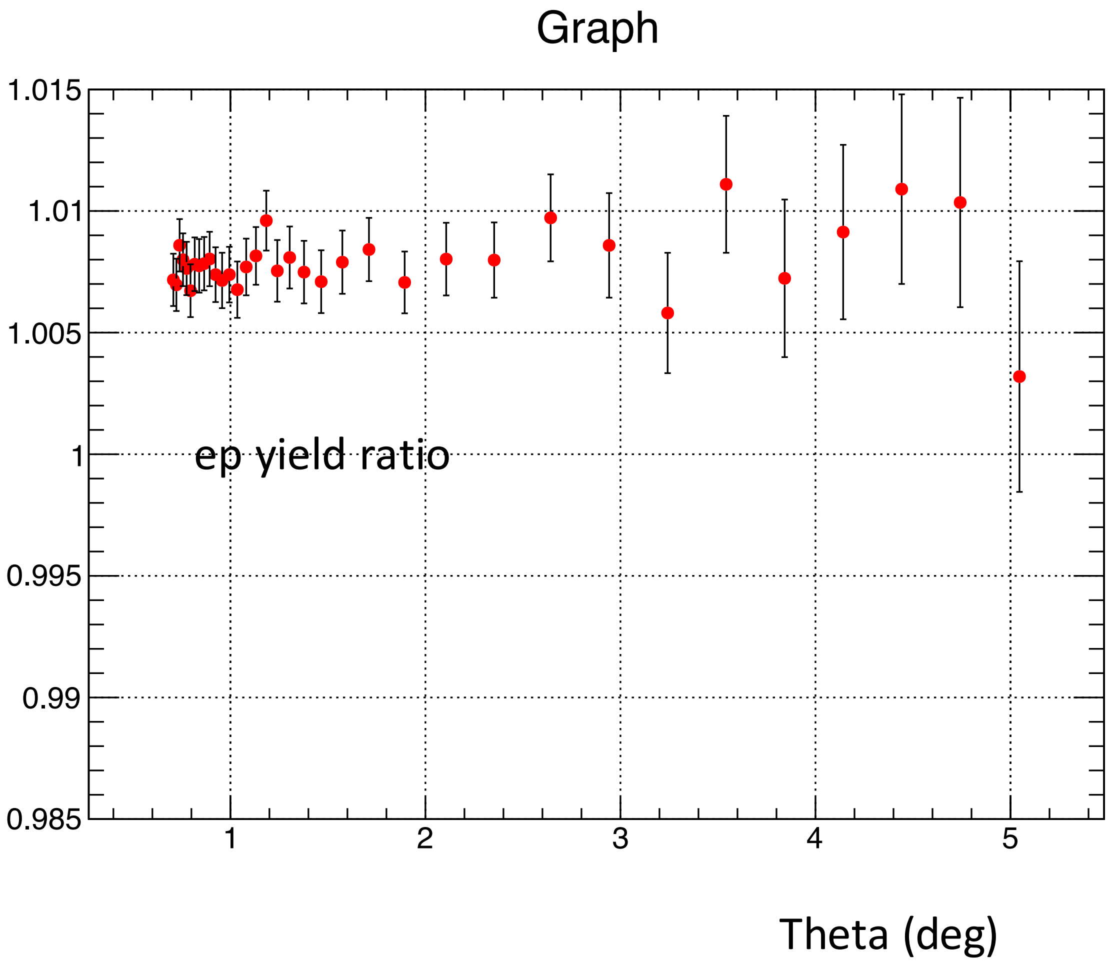




40mm long target vs point like upstream

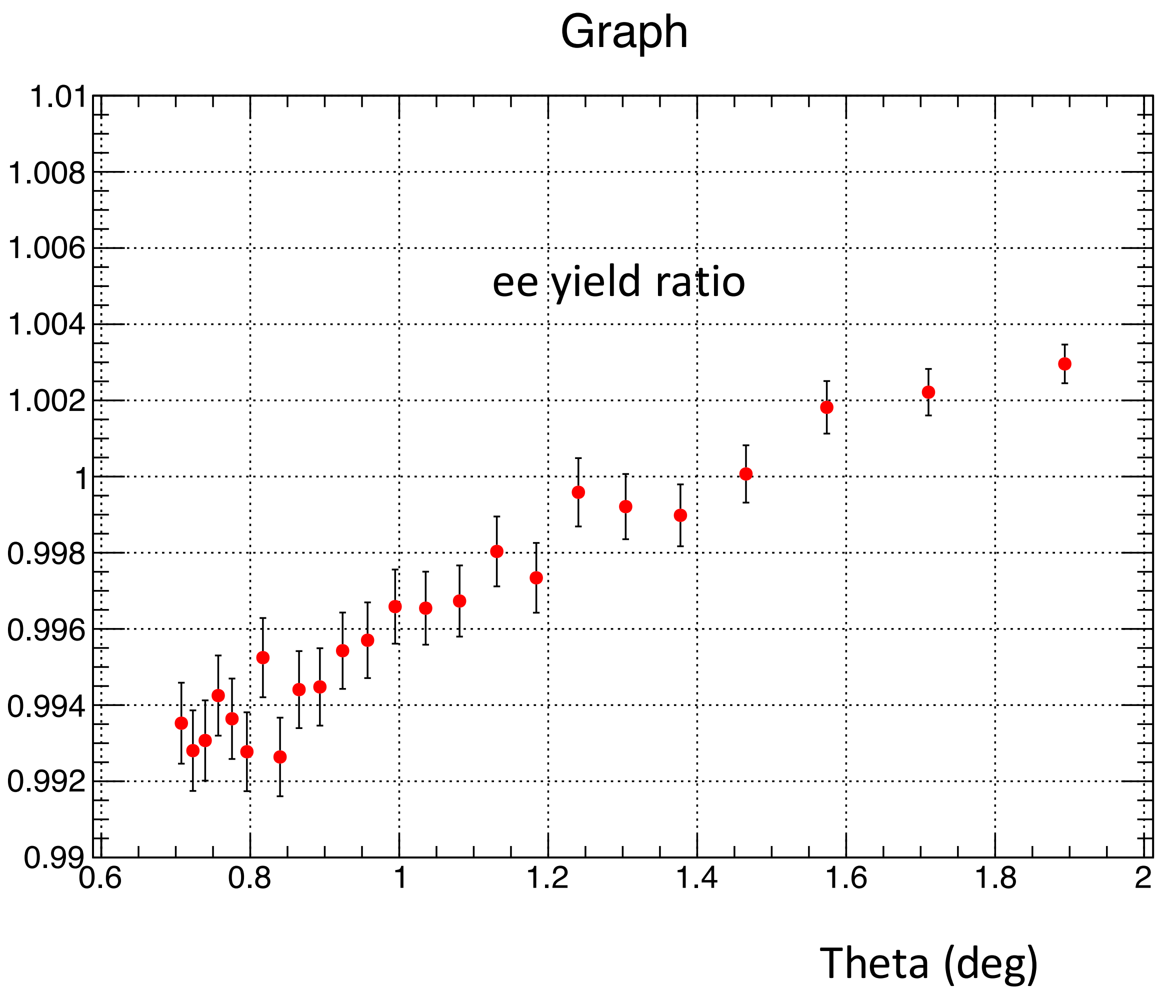
2GeV

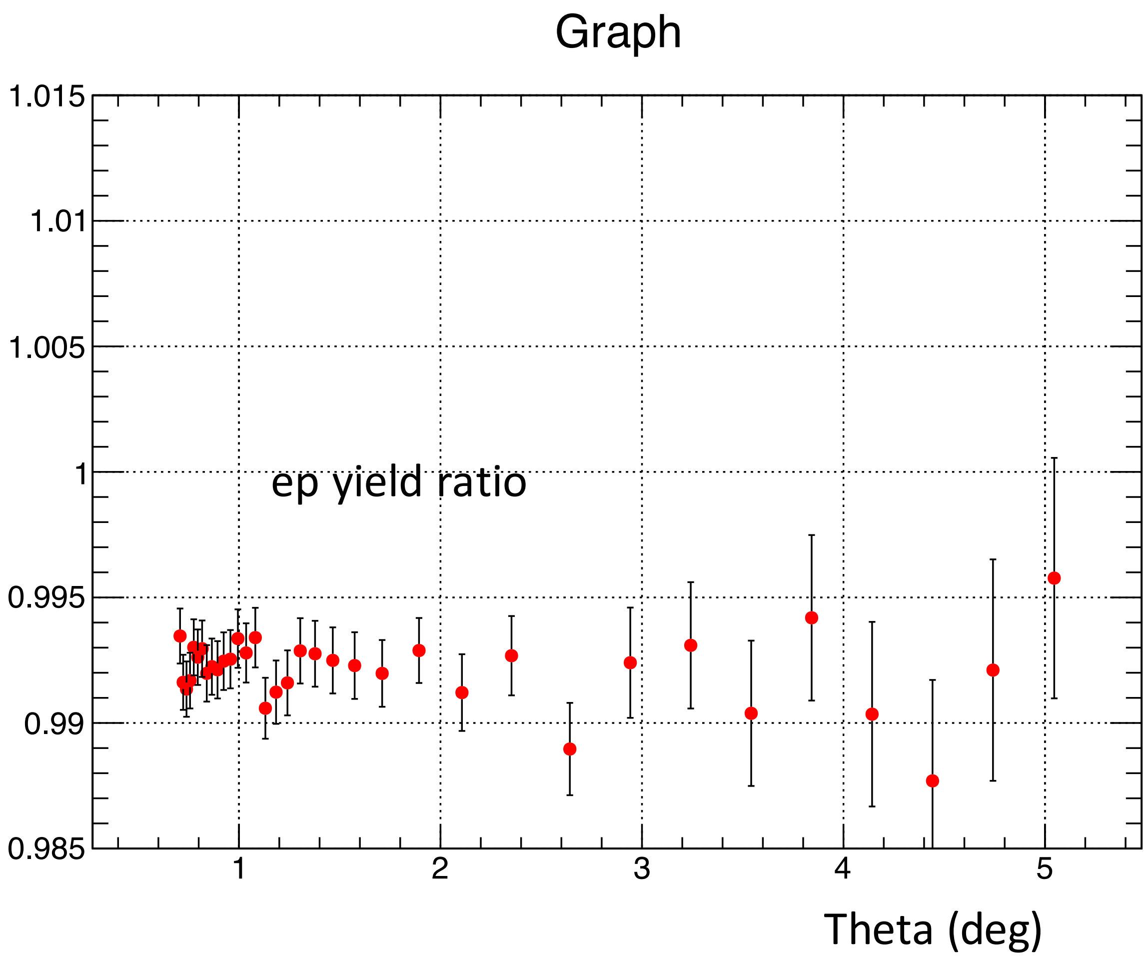




40mm long target vs point like upstream

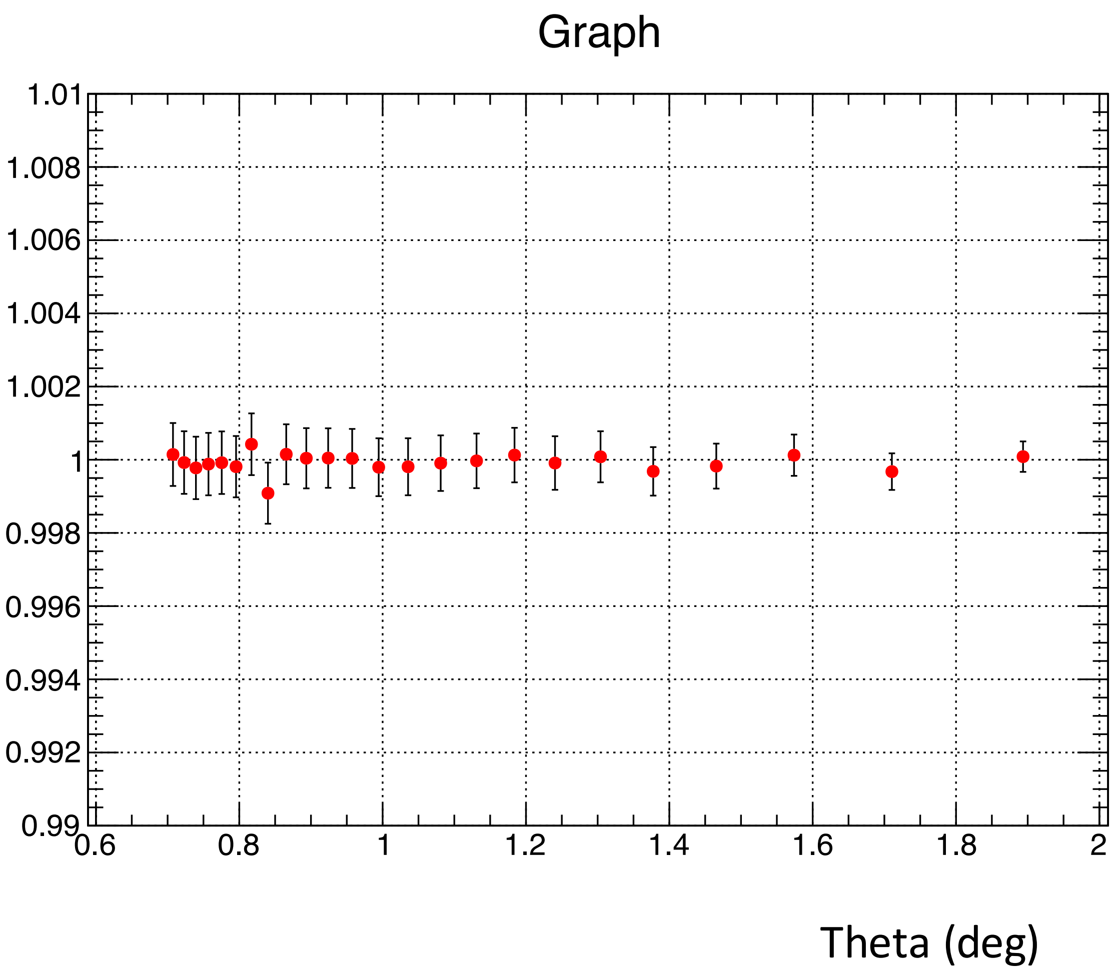
2GeV

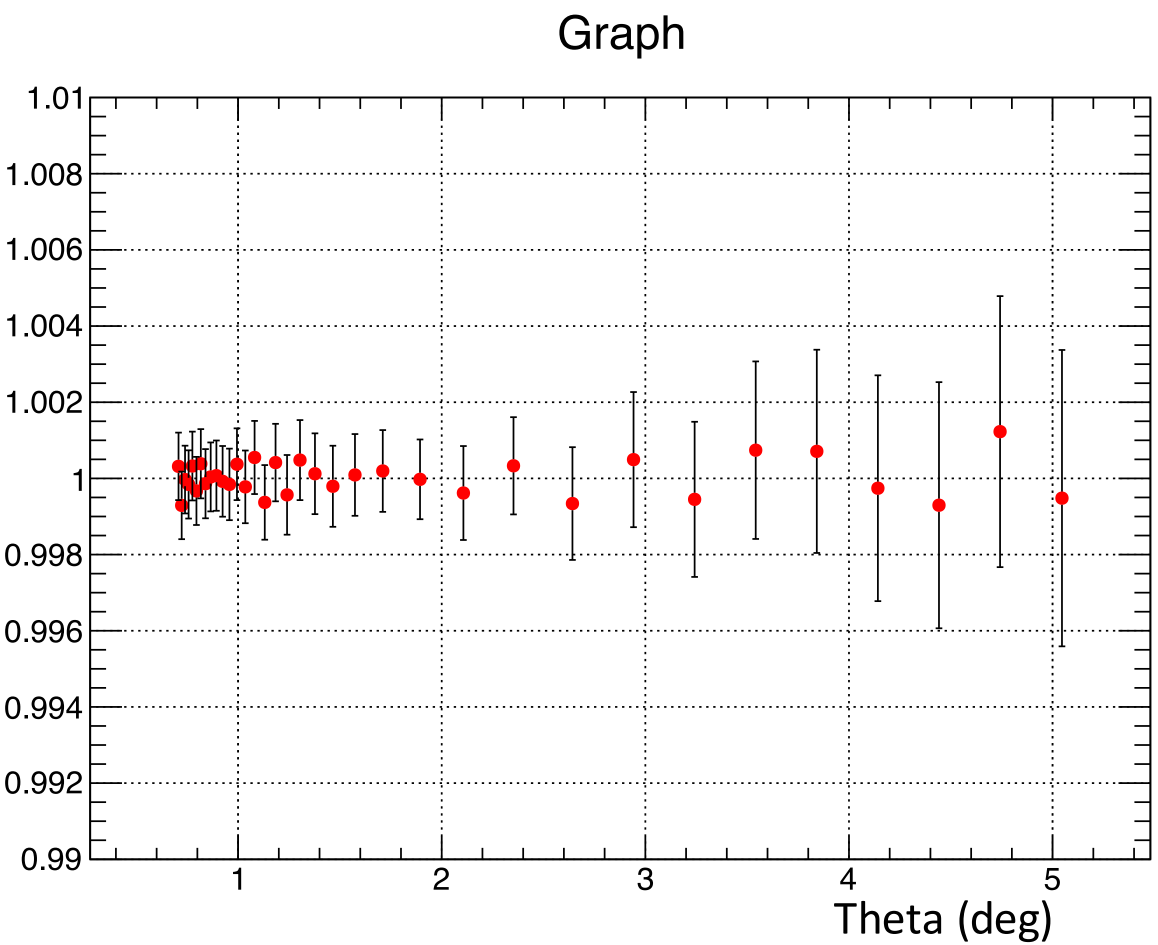




40mm long target vs point like (upstream + downstream)

2GeV

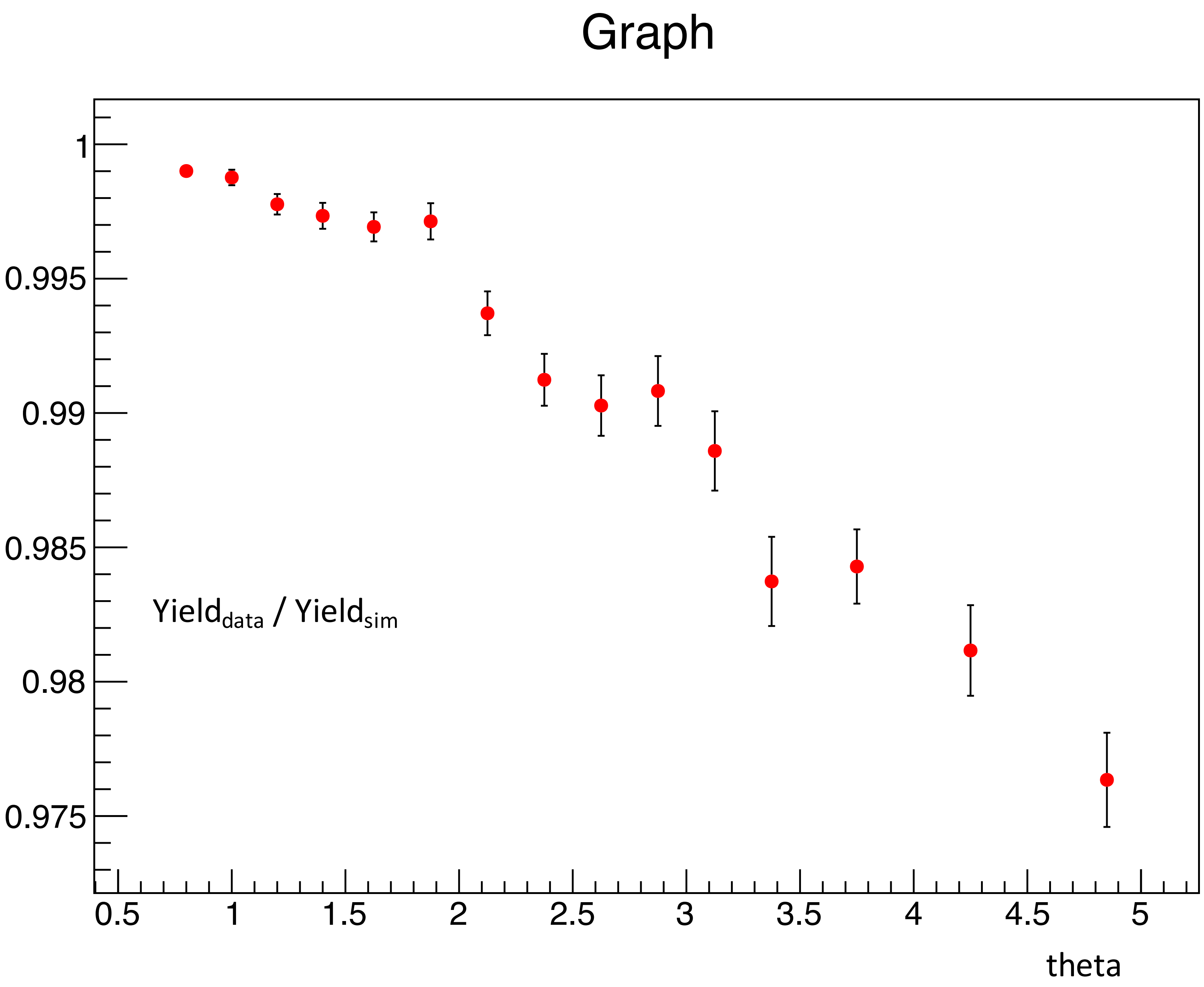




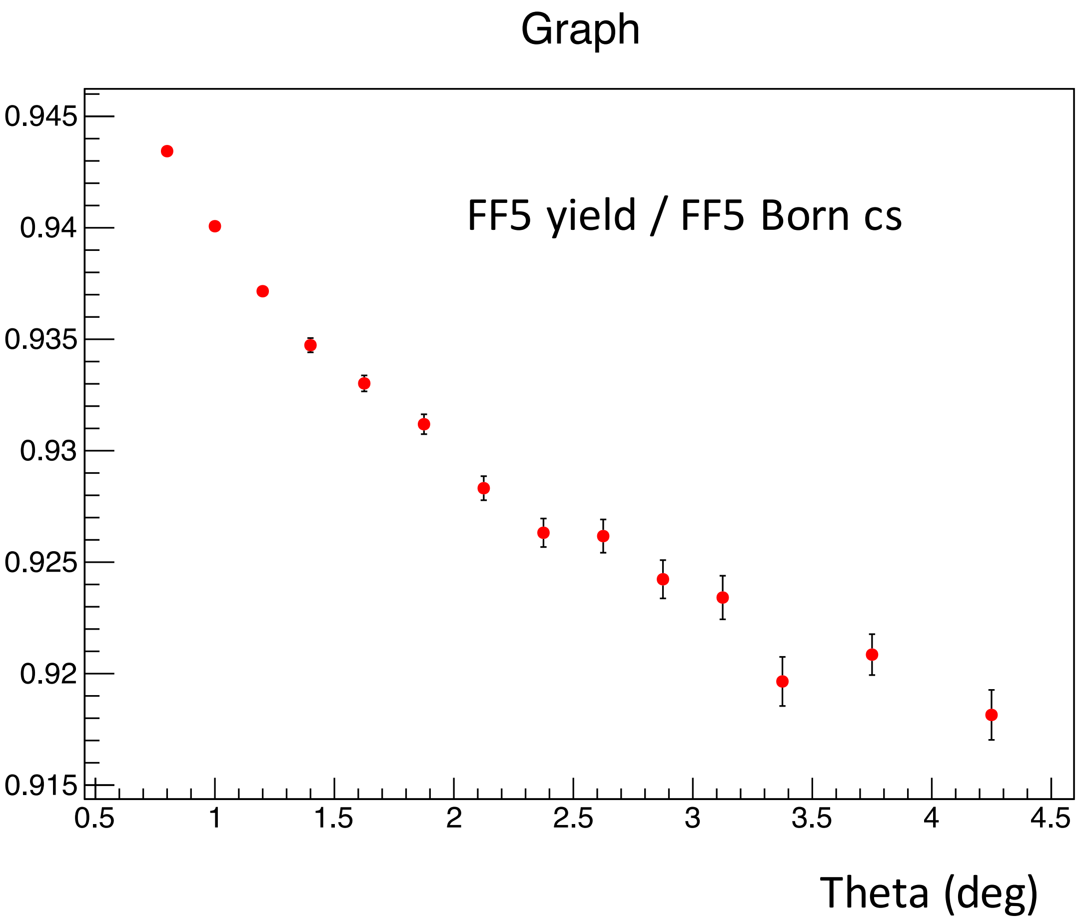
FF iteration test

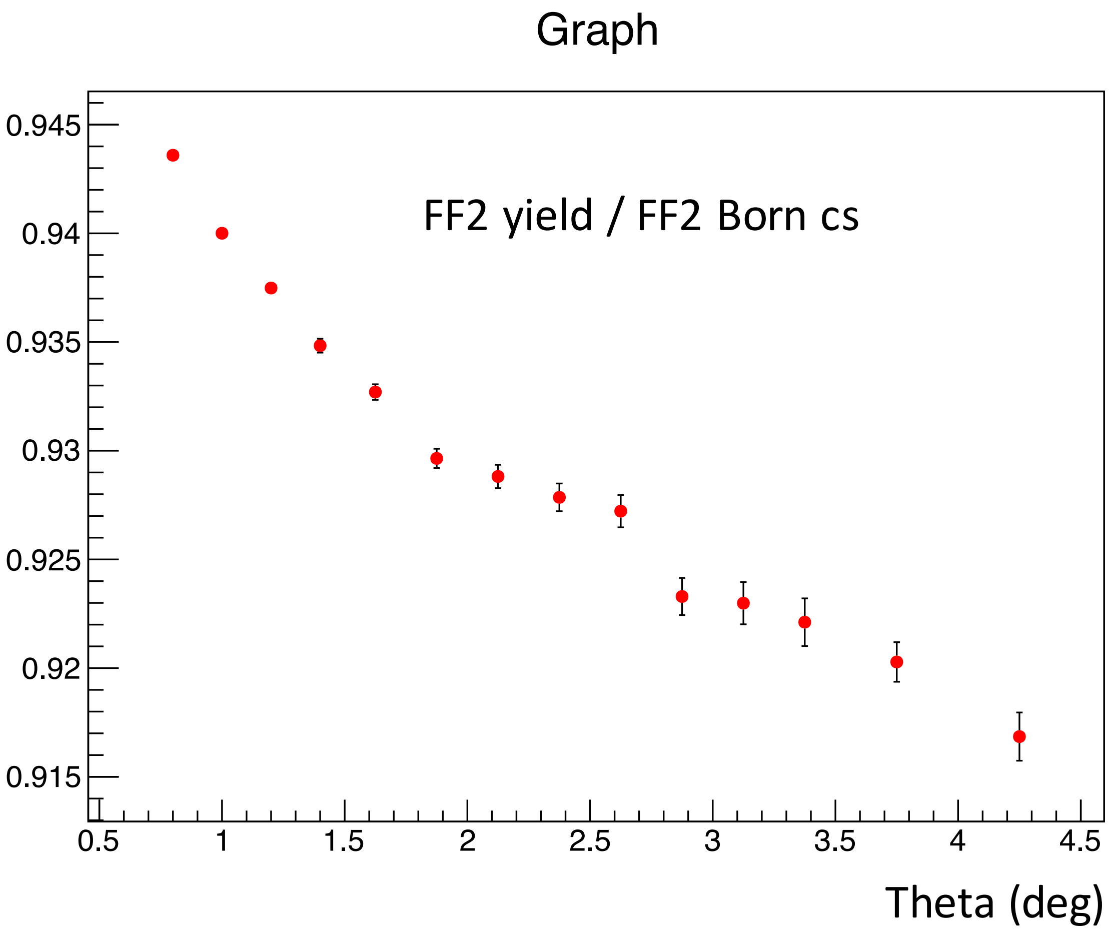
- A simple MC test to study how the iteration works:
  - Assuming simulation with FF5(Zhan's FF) as the fake data
  - Using simulation with FF2 (dipole FF) as the simulation
  - Try to do iteration and get the modified FF2 to agree with FF5

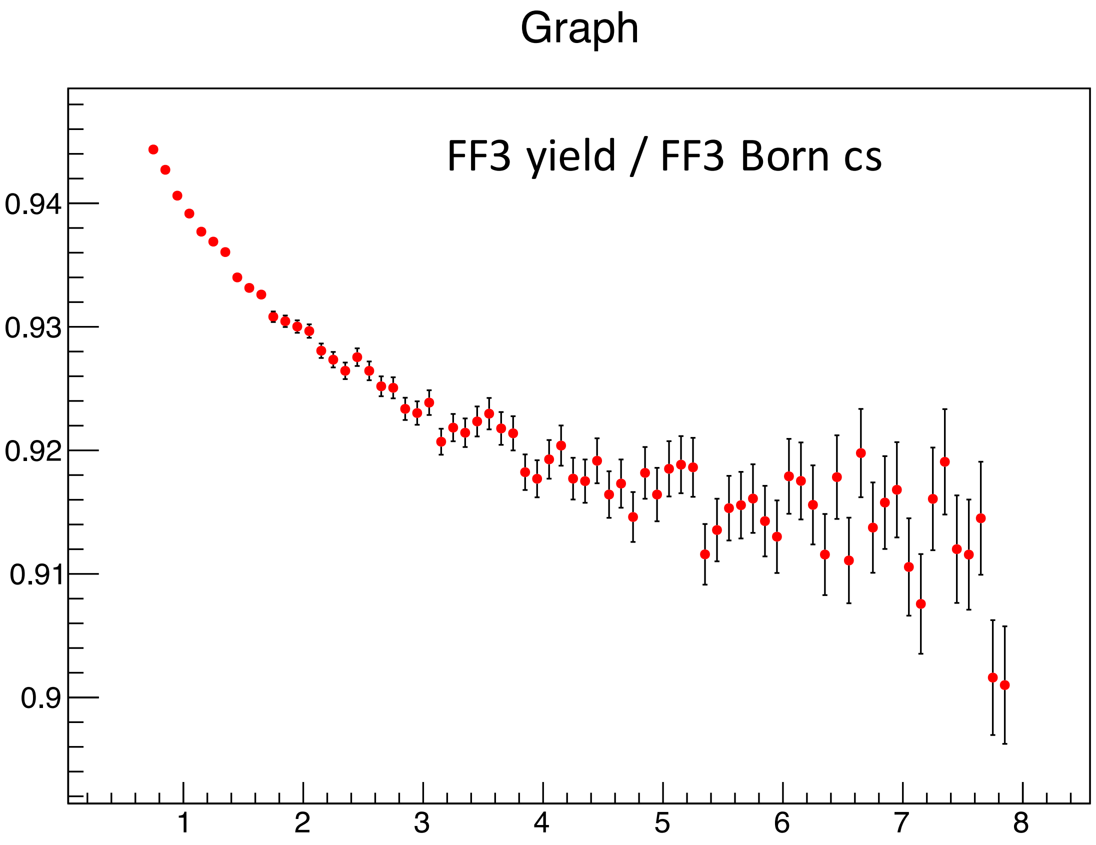
- Without running the full simulation just to save time
- Putting elasticity cut (+/- 140MeV) around the expected elastic scattering electron energy to get the yield
- $CS_{data} = (Y_{data})/(Y_{sim}) \times CS_{sim}$
- And then obtain the GE_{data}/GE_{sim}

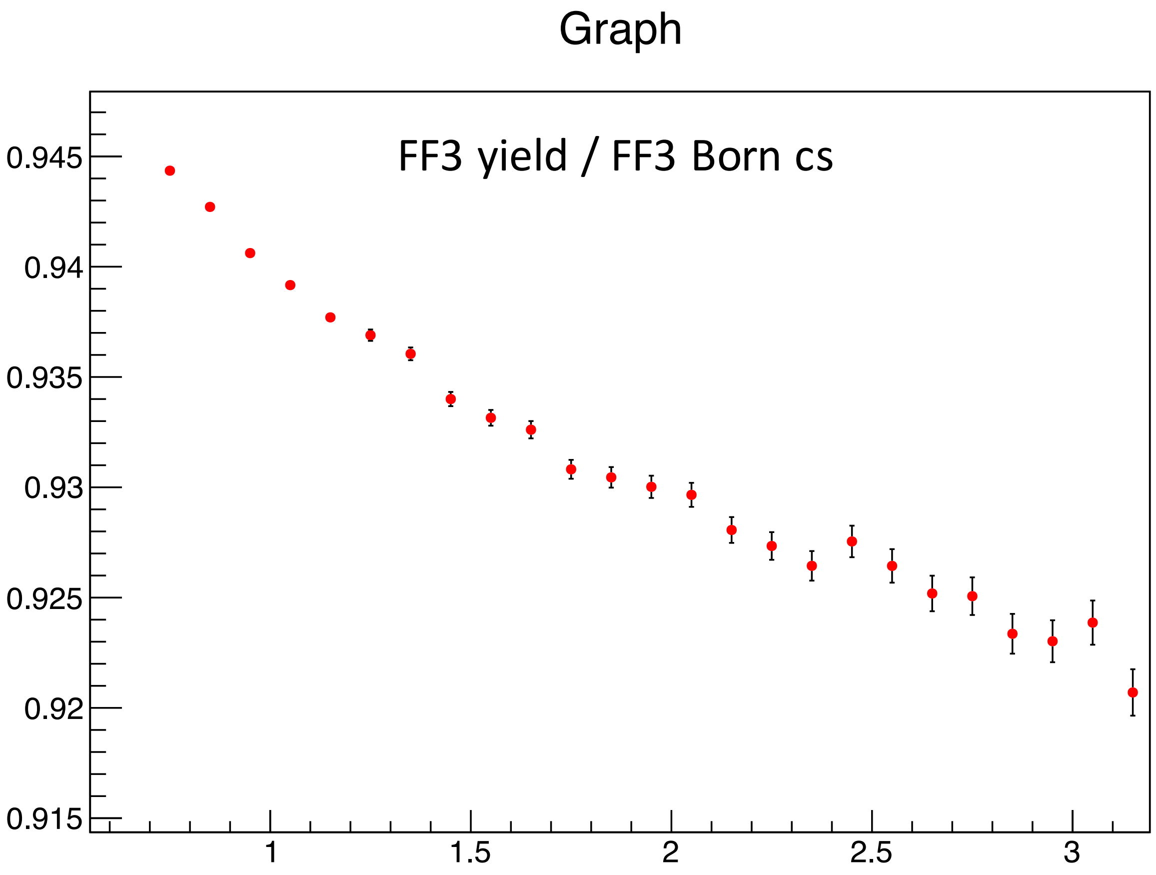


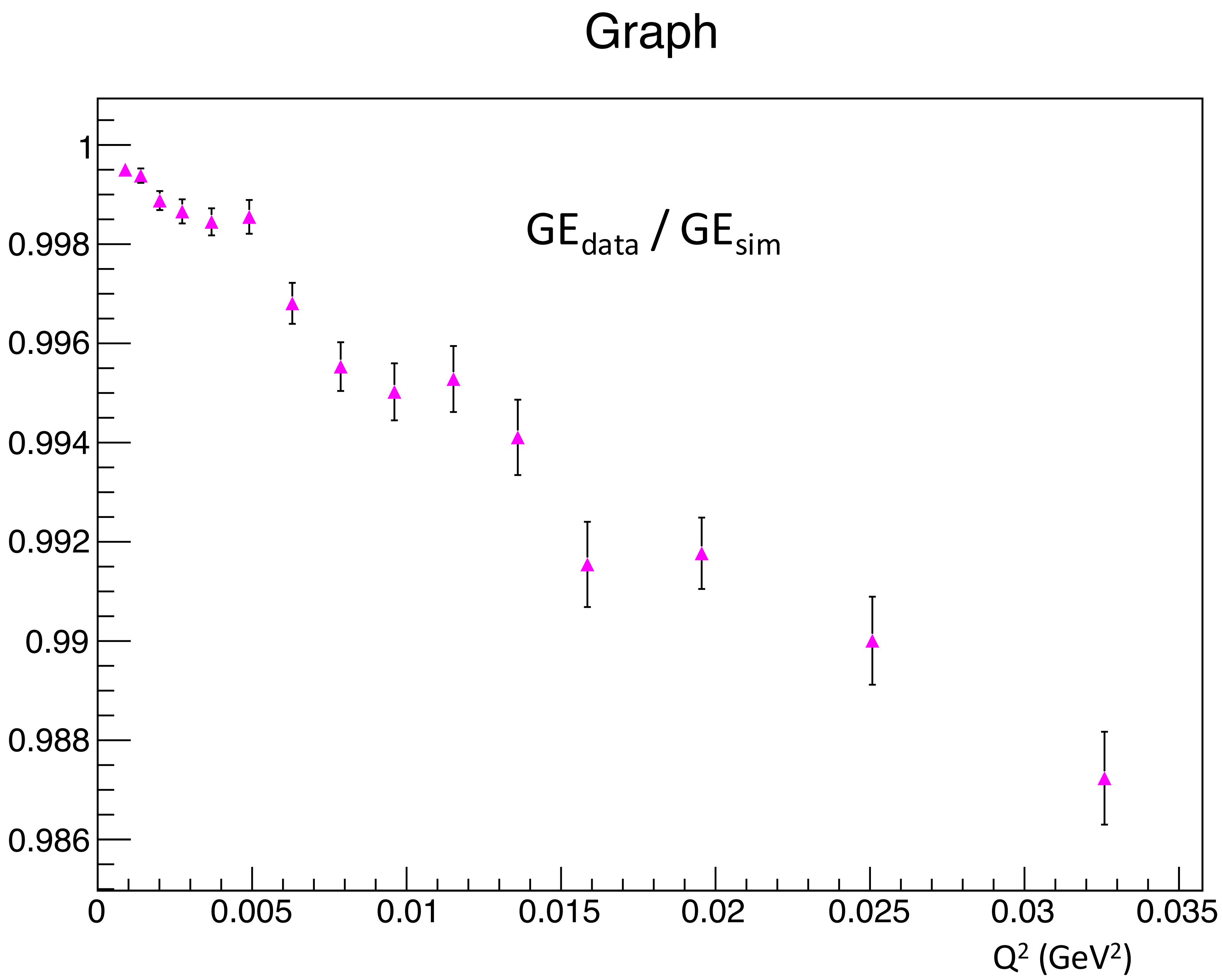
Graph
1
0.995
0.99
0.985
0.98
0.975
$Yield_{data}$ / $Yield_{sim}$
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
theta

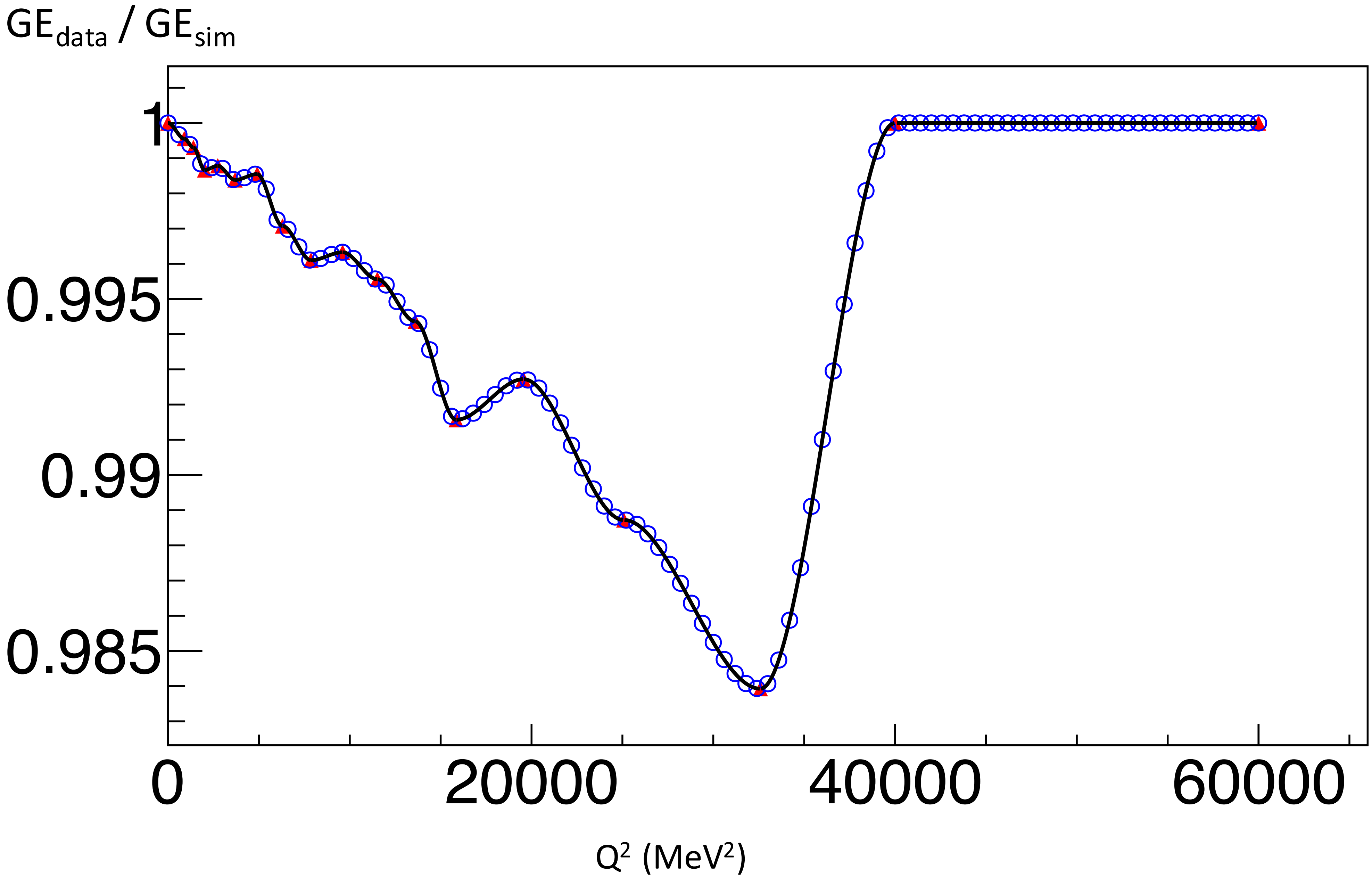

Graph
FF5 yield / FF5 Born cs
0.945
0.94
0.935
0.93
0.925
0.92
0.915
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Theta (deg)


Graph
FF2 yield / FF2 Born cs
0.945
0.94
0.935
0.93
0.925
0.92
0.915
0.5
1
1.5
2
2.5
3
3.5
4
4.5
Theta (deg)

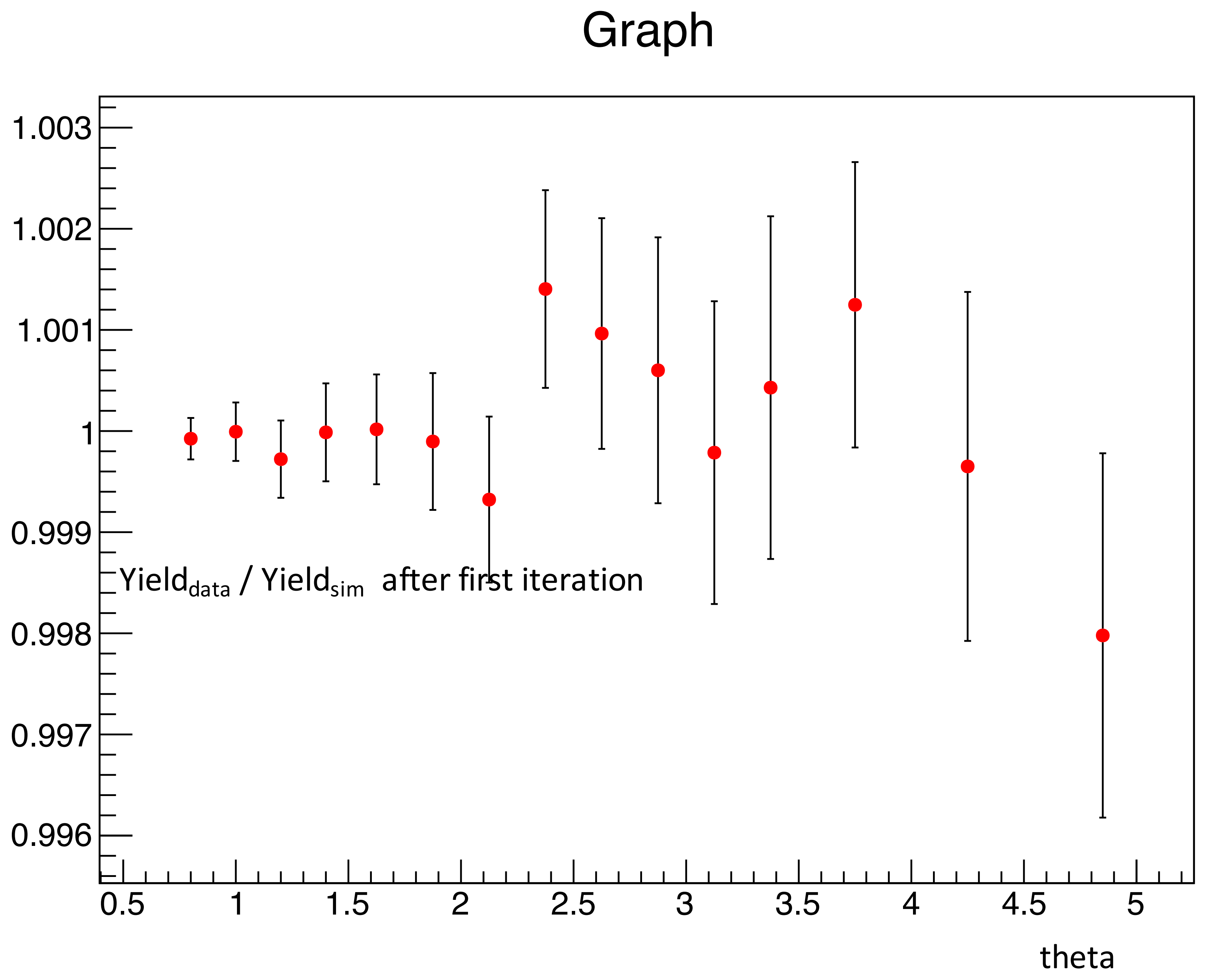

Graph
FF3 yield / FF3 Born cs
0.94
0.93
0.92
0.91
0.9
1
2
3
4
5
6
7
8

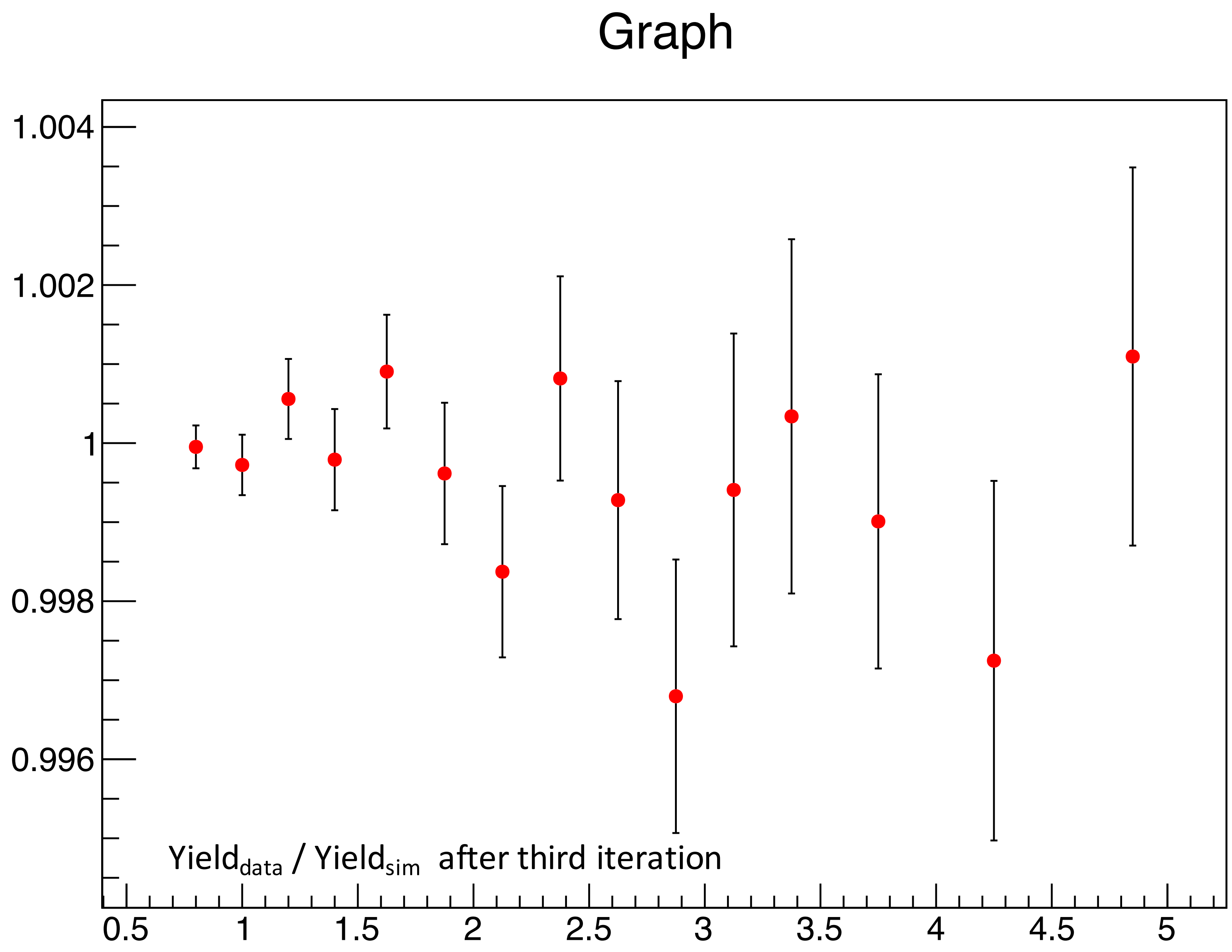

Graph
FF3 yield / FF3 Born cs
0.945
0.94
0.935
0.93
0.925
0.92
0.915
1
1.5
2
2.5
3


Graph
GEdata / GEsim
1
0.998
0.996
0.994
0.992
0.99
0.988
0.986
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
Q2 (GeV2)



GE_data / GE_sim
1
0.995
0.99
0.985
0
20000
40000
60000
Q² (MeV²)


Graph
1.003
1.002
1.001
1
0.999
0.998
0.997
0.996
Yield$_{data}$ / Yield$_{sim}$ after first iteration
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
theta


Graph
1.004
1.002
1
0.998
0.996
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
$Yield_{data}$ / $Yield_{sim}$ after third iteration