Radiative Correction Model Check

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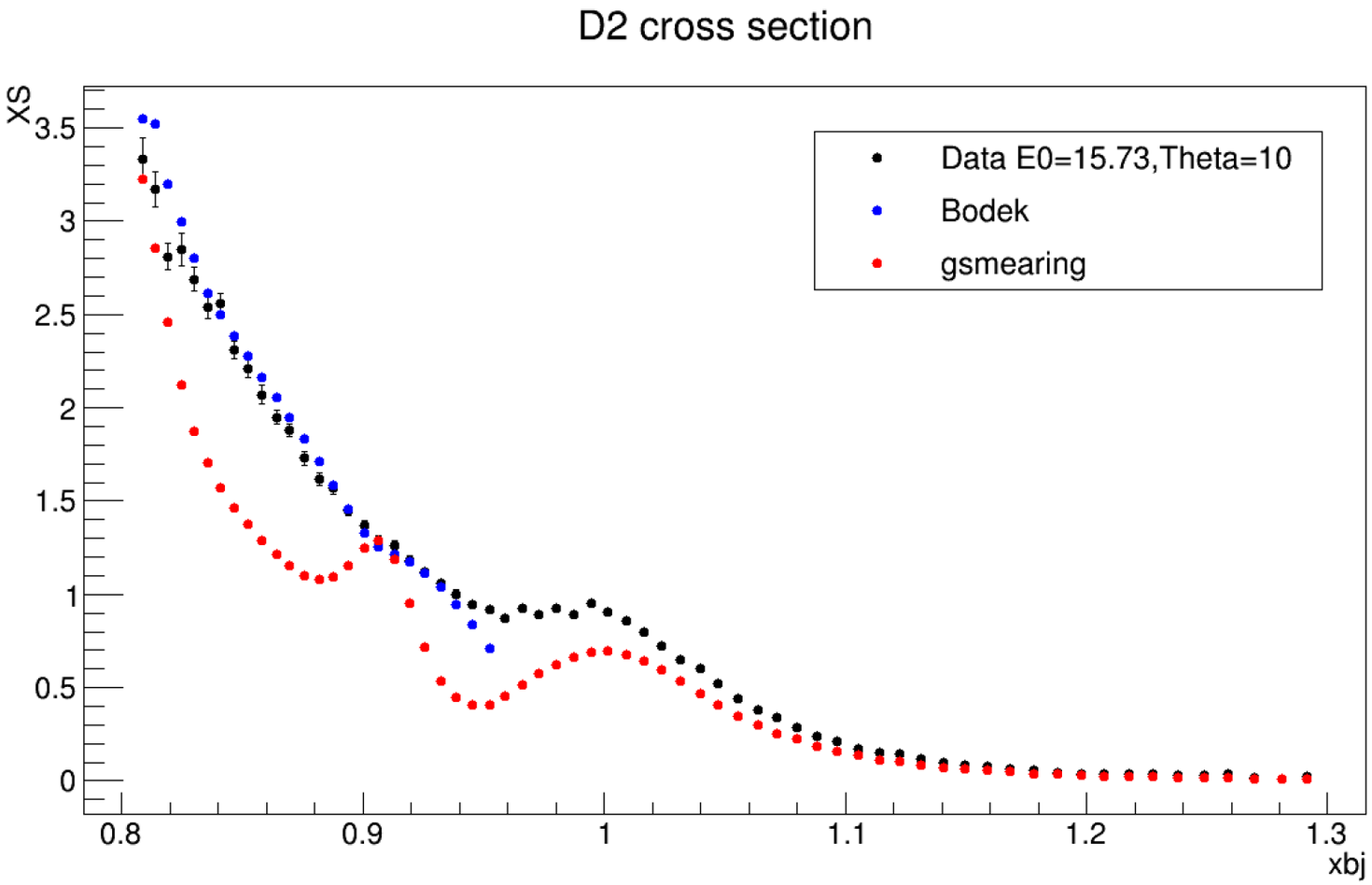
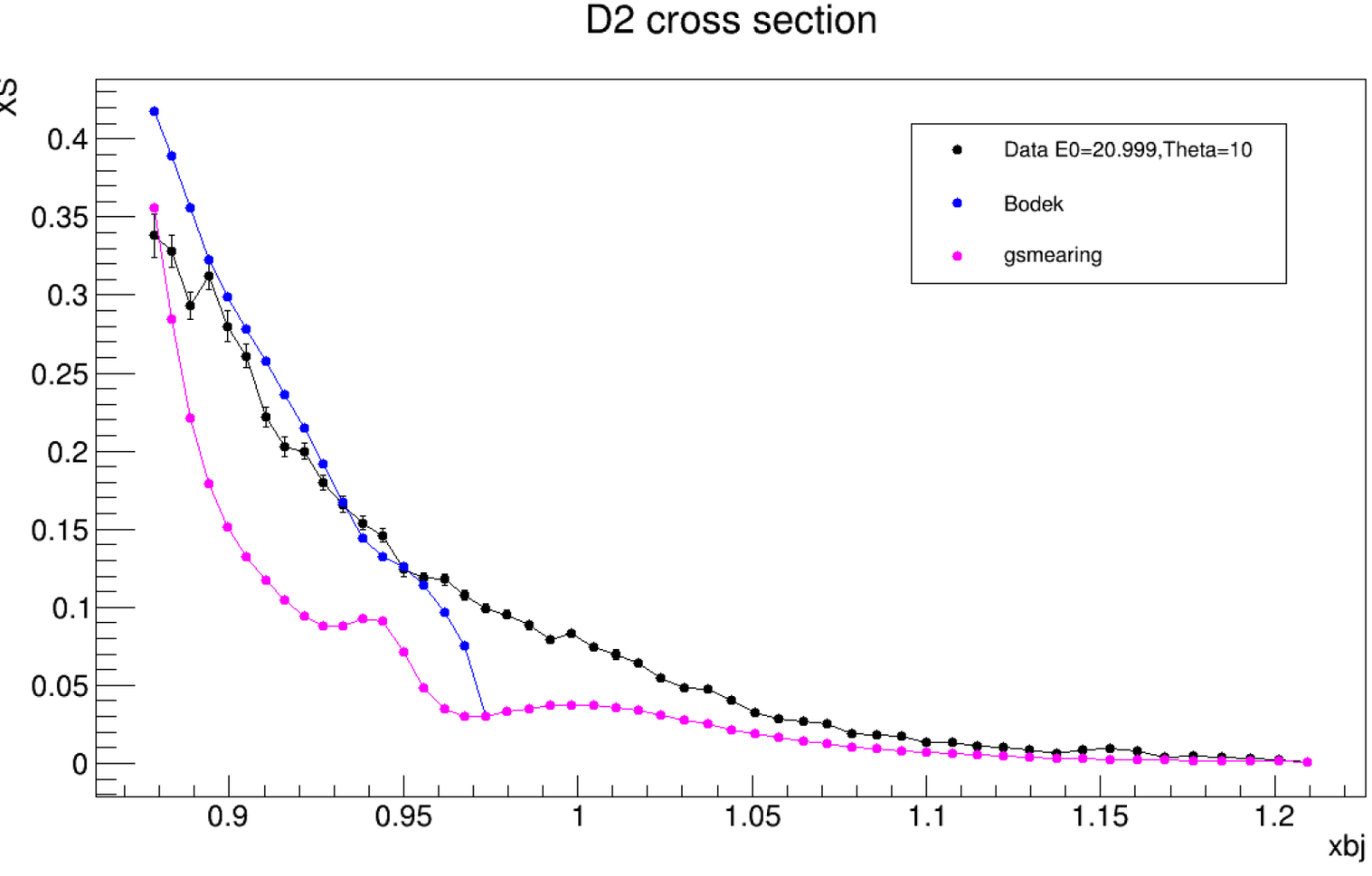
Thanks to Eric Christy!

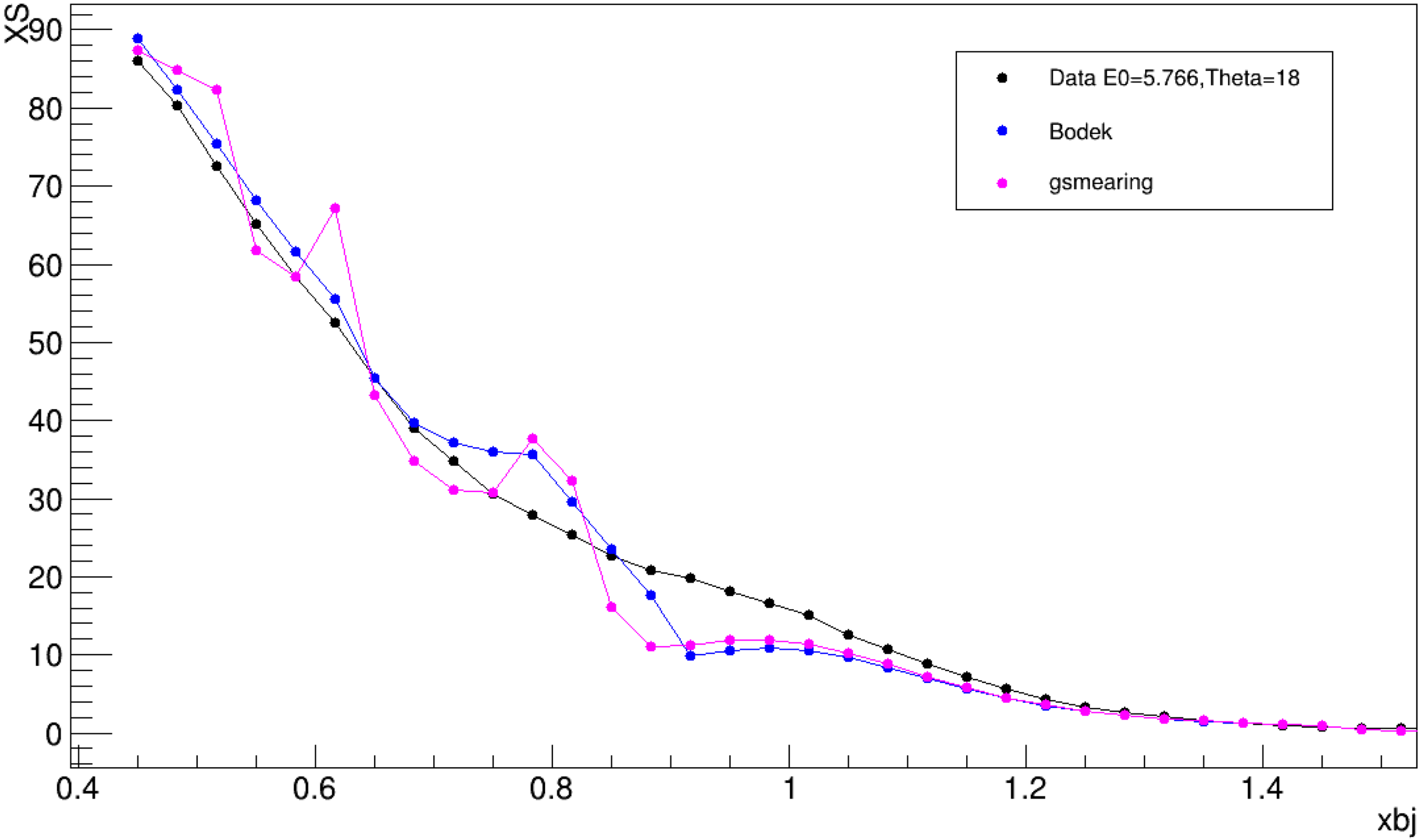
1. DIS model born cross section could be compared with our data;
2. Quasi elastic and resonance parts would have radiative tail on the DIS region, so the model cross section in quasi and resonance region have to be examined, too;
3. gsmearing is a fit for heavy nuclei (A>10). It hasn't been tested for light nuclei;
4. Compare the model born cross section with world quasi elastic data of light nuclei;



gsmearing doesn’t work well on Deuterium. There’s another deuterium model available from Eric Christy

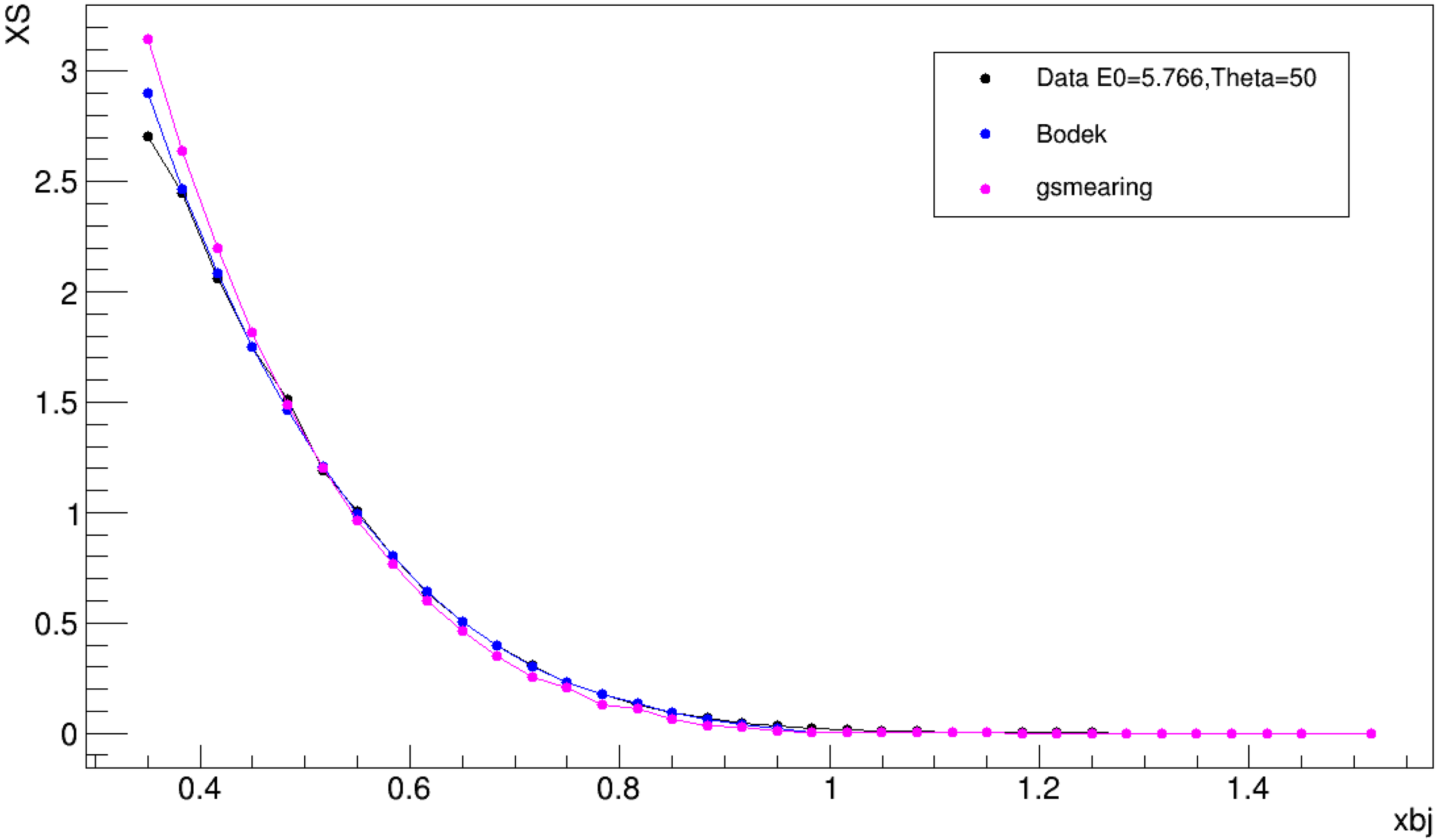


He4 cross section



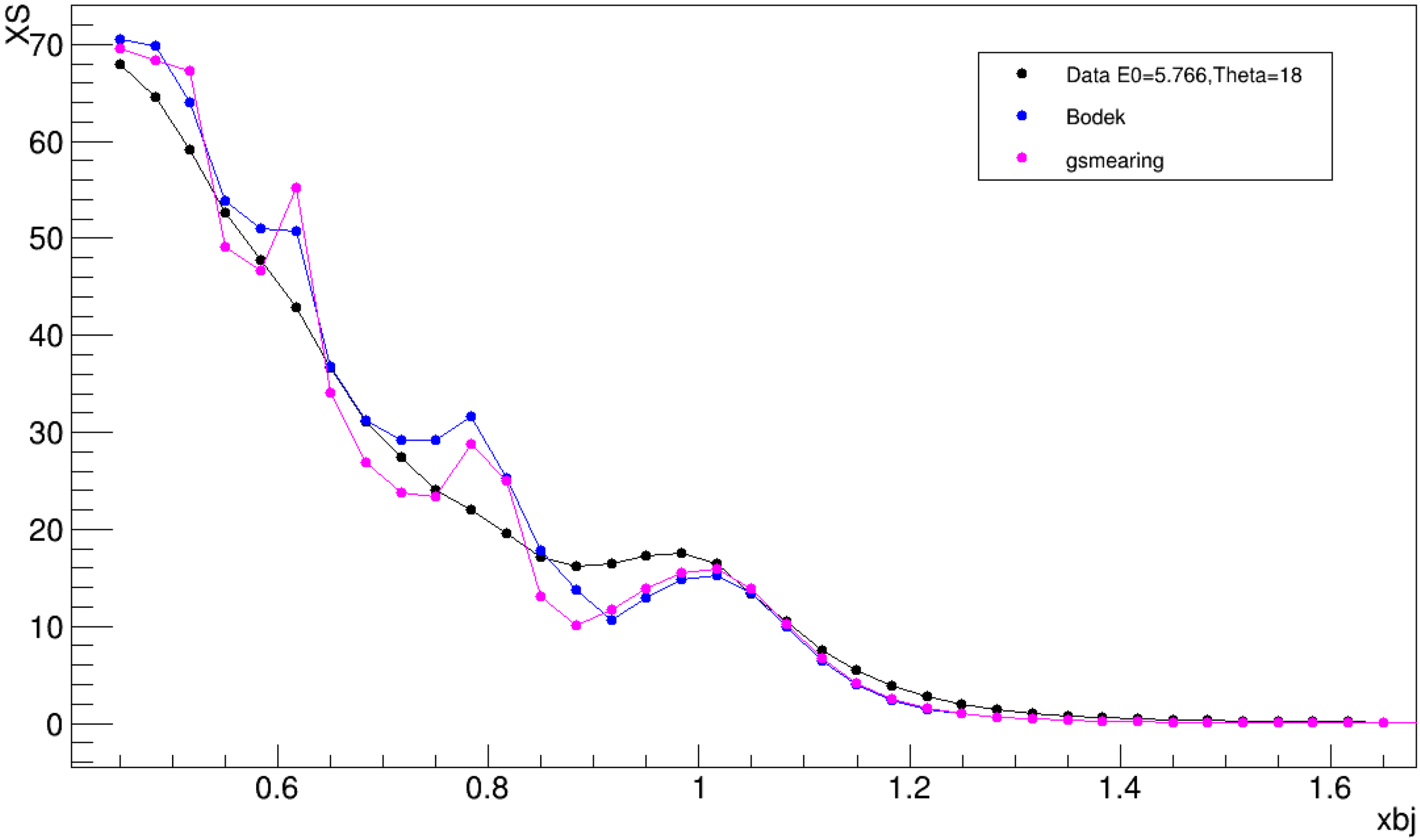
E0=5.766 GeV, theta=18 deg

He4 cross section



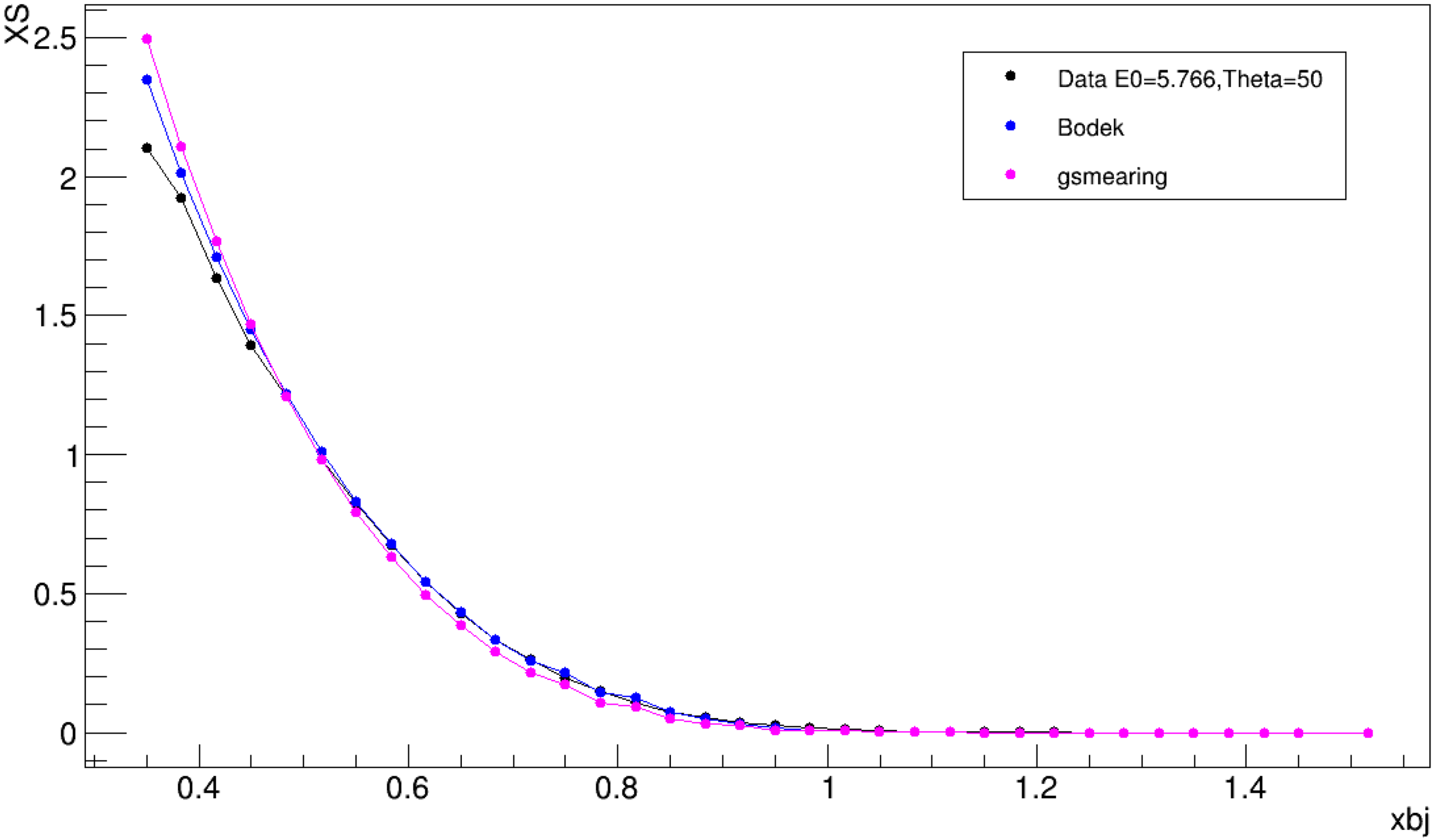
E0=5.766 GeV, theta=50 deg

He3 cross section



E0=5.766 GeV, theta=18 deg

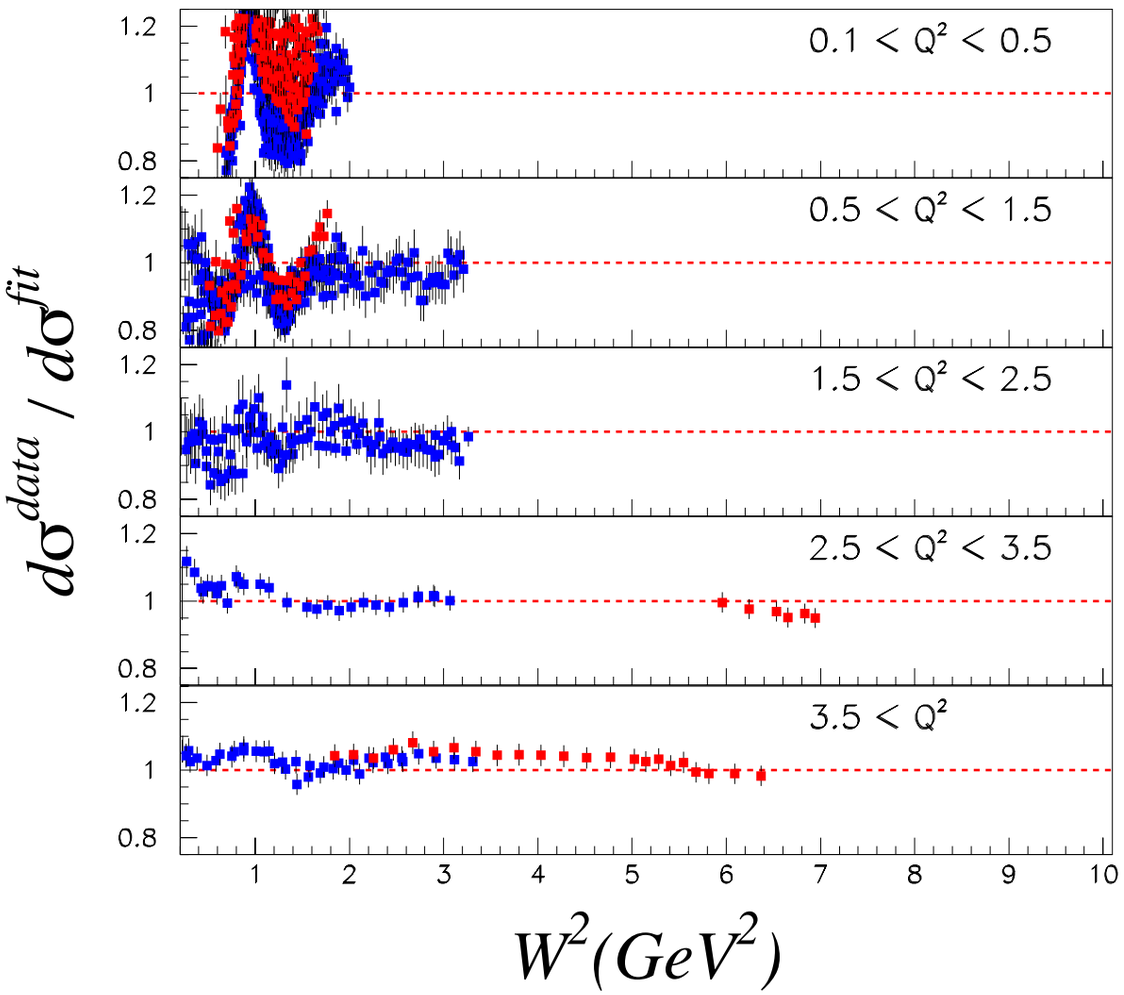
He3 cross section



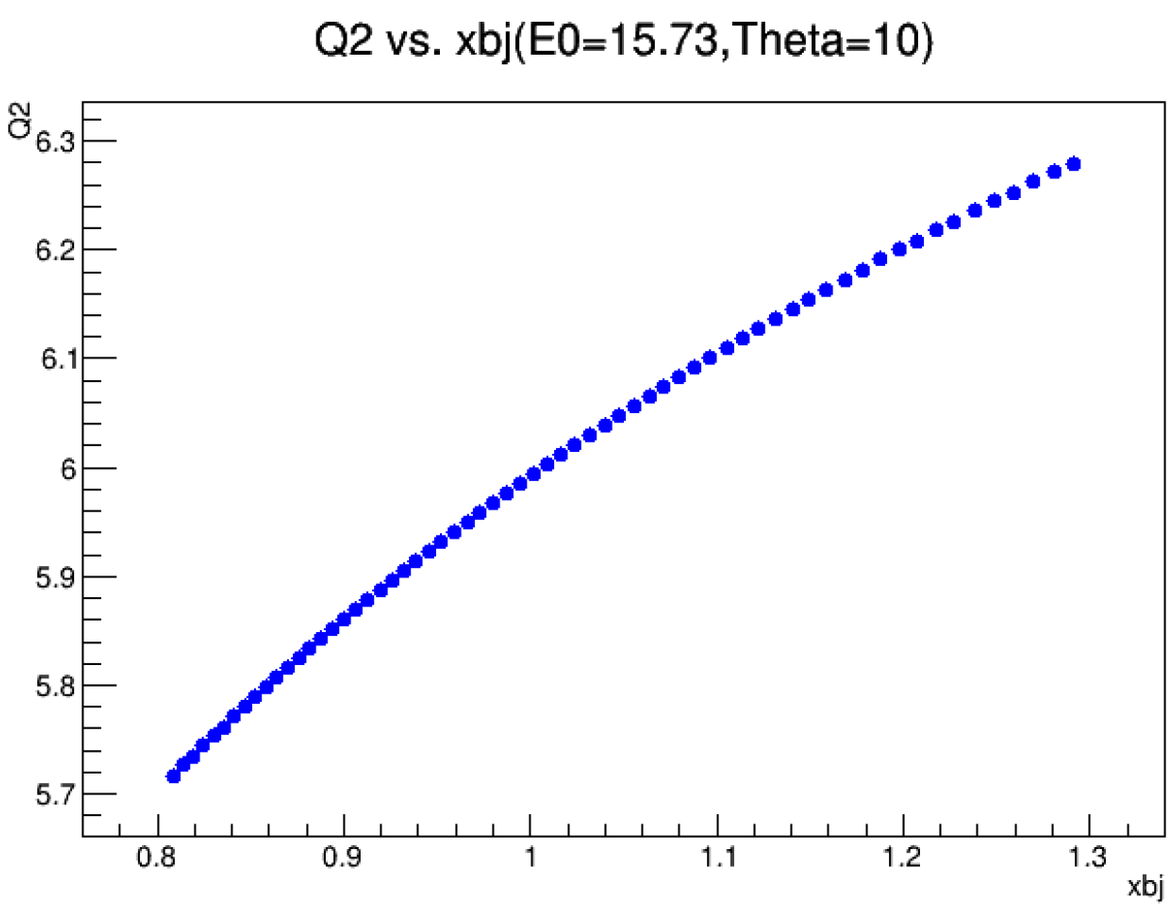
E0=5.766 GeV, theta=50 deg

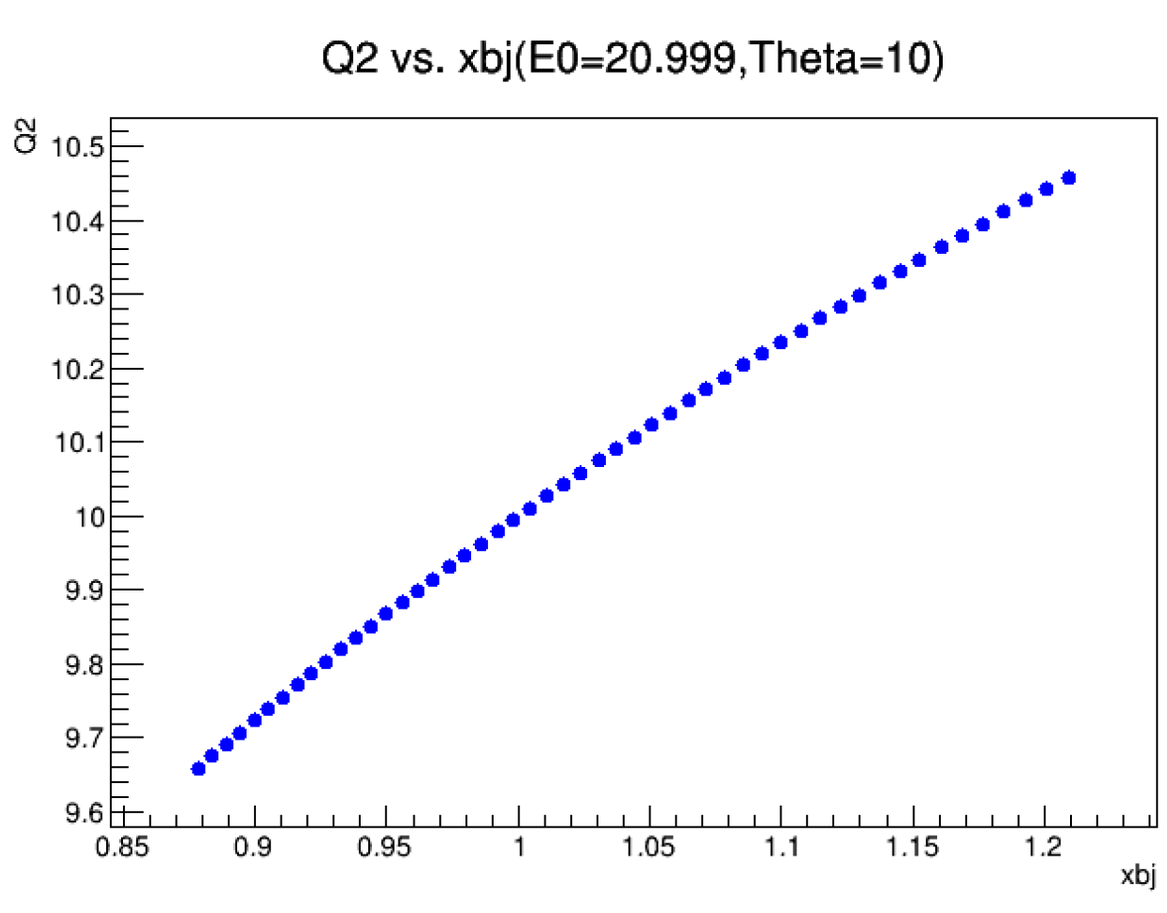
Conclusions:

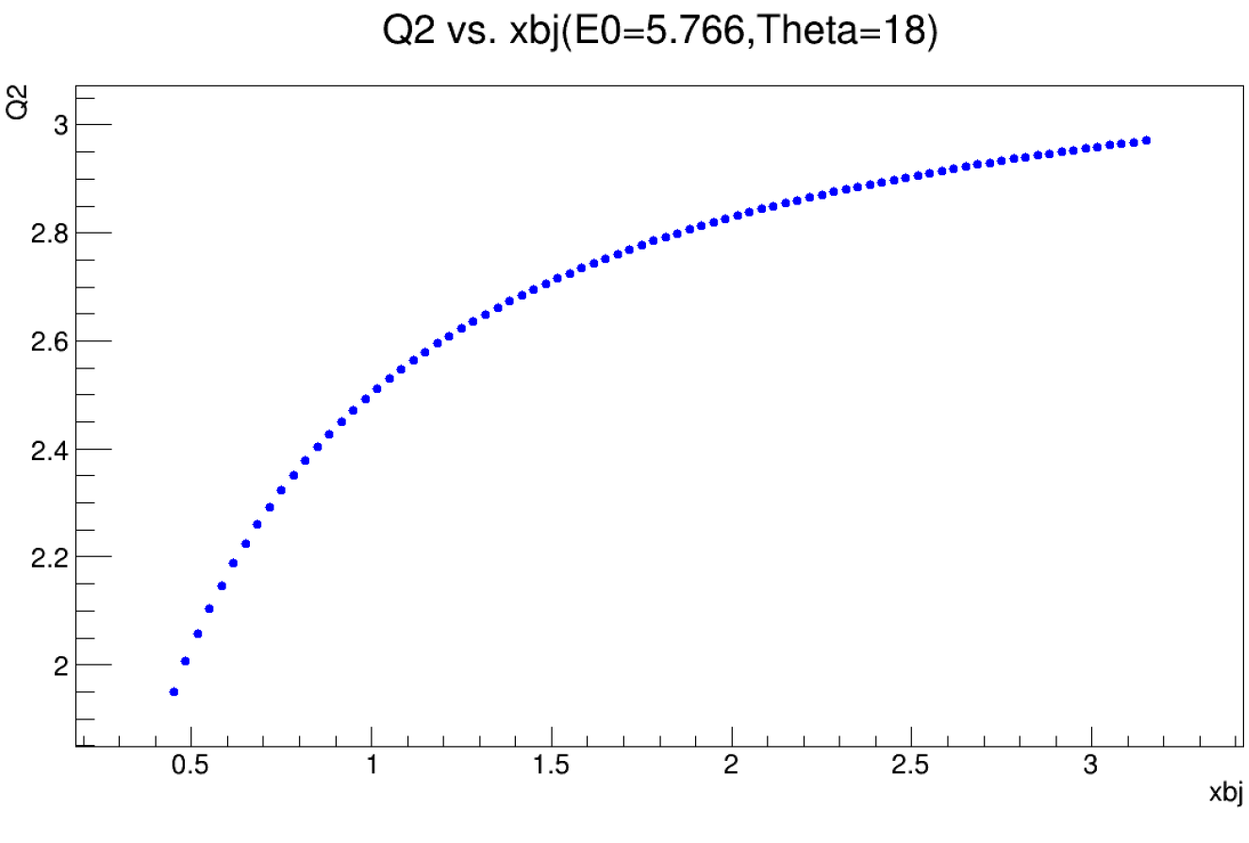
1. For deuterium, gsmearing doesn't work well. I would incorporate another deuterium model from Eric Christy;
2. For A>2, both Bodek and gsmearing have bumps while the data doesn't have obvious resonance. So it's hard to make the comparison.
3. Eric noticed that the gsmearing we used doesn't do the smearing for light nuclei. A new version with smearing is available for tuning. I would optimize it by comparing with world data.

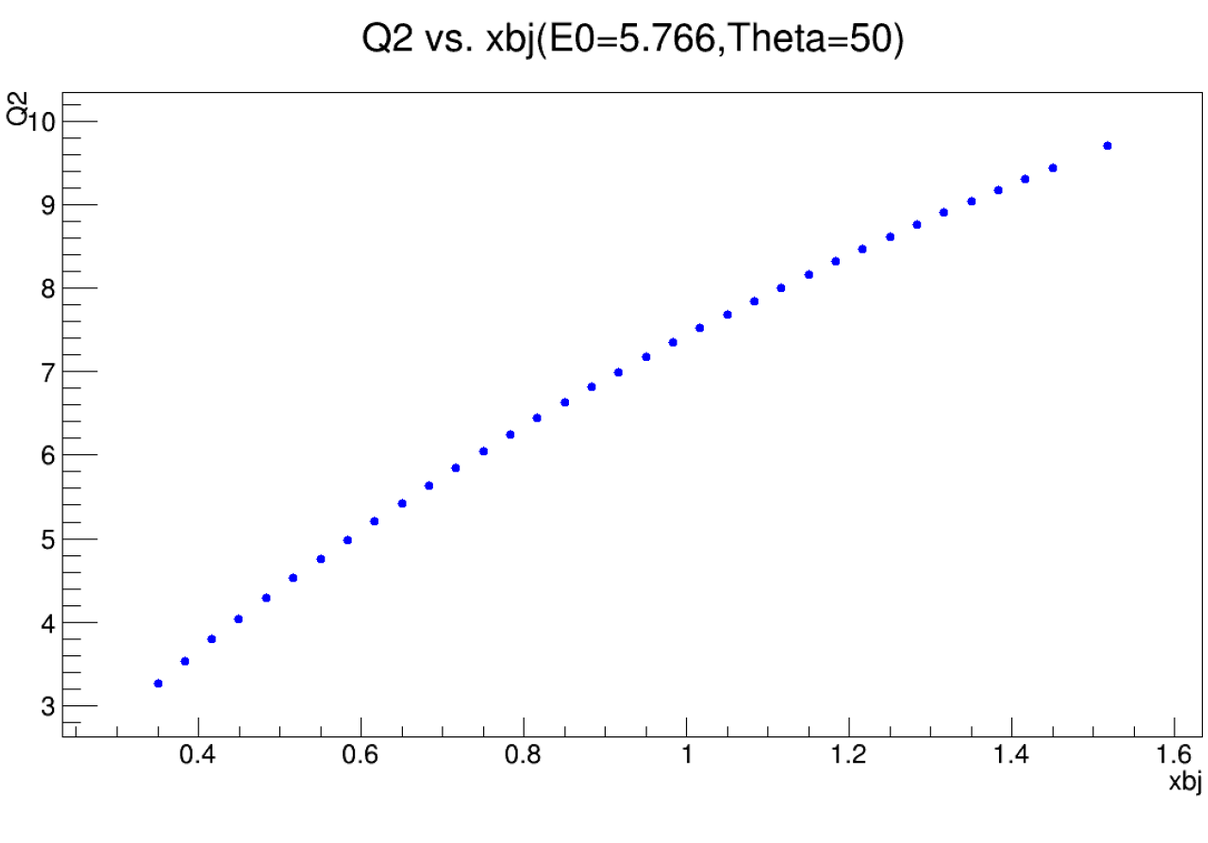


He4 data/(gsmearing fit) plot from Eric


Q2 vs. xbj(E0=15.73,Theta=10)
Q2
6.3
6.2
6.1
6
5.9
5.8
5.7
0.8
0.9
1
1.1
1.2
1.3
xbj


Q2 vs. xbj(E0=20.999,Theta=10)
Q2
10.5
10.4
10.3
10.2
10.1
10
9.9
9.8
9.7
9.6
0.85
0.9
0.95
1
1.05
1.1
1.15
1.2
xbj


Q2 vs. xbj(E0=5.766,Theta=18)
Q2
3
2.8
2.6
2.4
2.2
2
0.5
1
1.5
2
2.5
3
xbj


Q2 vs. xbj(E0=5.766,Theta=50)
Q2
10
9
8
7
6
5
4
3
0.4
0.6
0.8
1
1.2
1.4
1.6
xbj