LD2 data (run 2975,2976)	He4 data
Cut_1: T3 no edtm |L_theta|<=0.06 && |L_phi|<=0.03	

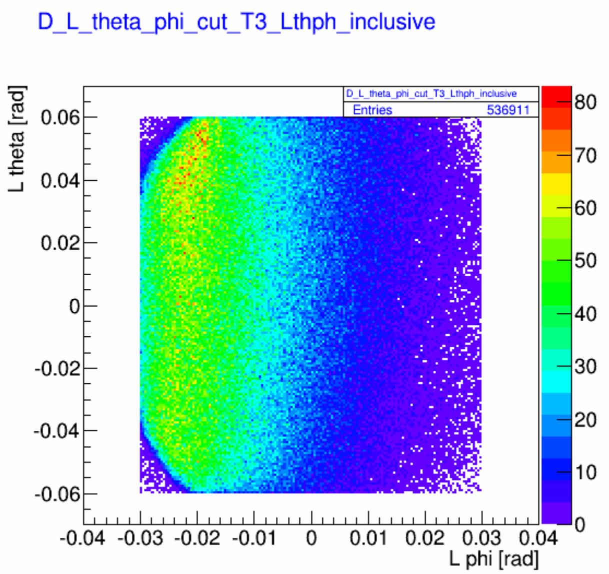
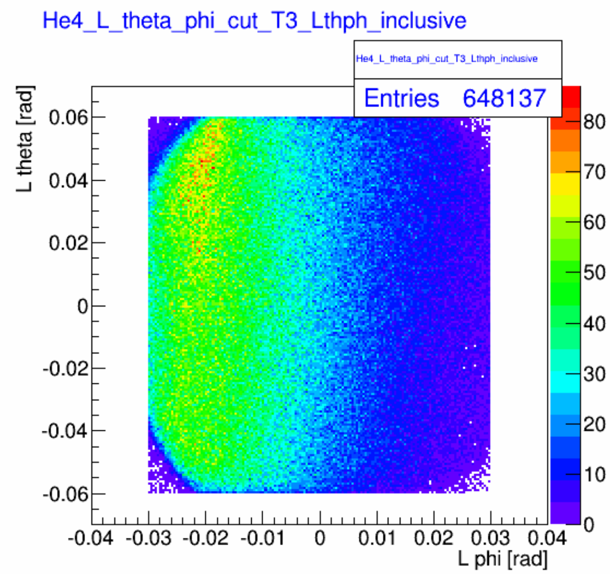

	

Figure B 1.1: L Acceptance: Theta vs phi	Figure B 1.2: L Acceptance: Theta vs phi
Cut_2: (add) electron PID with (prl_sum_E/p)>=0.7	

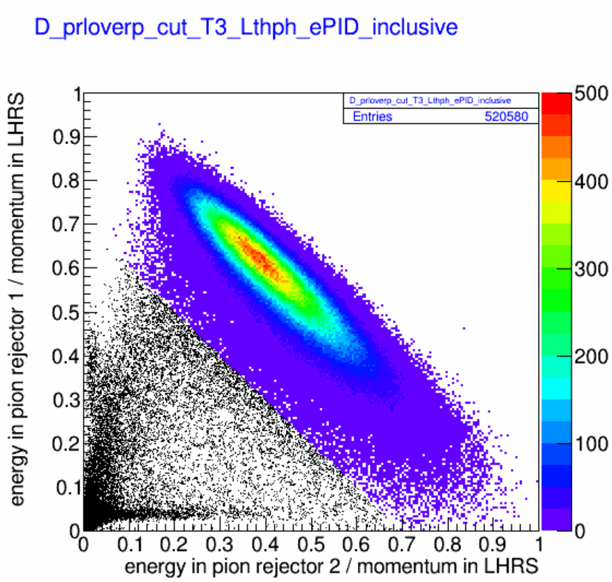
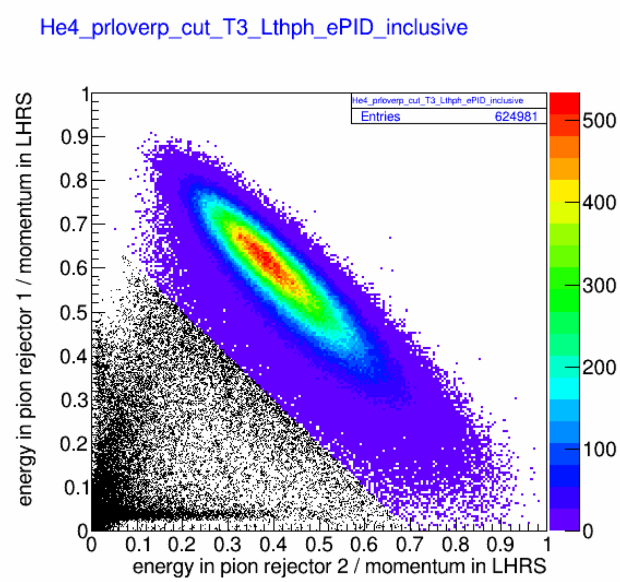

	

Figure 2.1: Electron PID: prl_1_E/p vs prl_2_E/p	Figure 2.2: Electron PID: prl_1_E/p vs prl_2_E/p

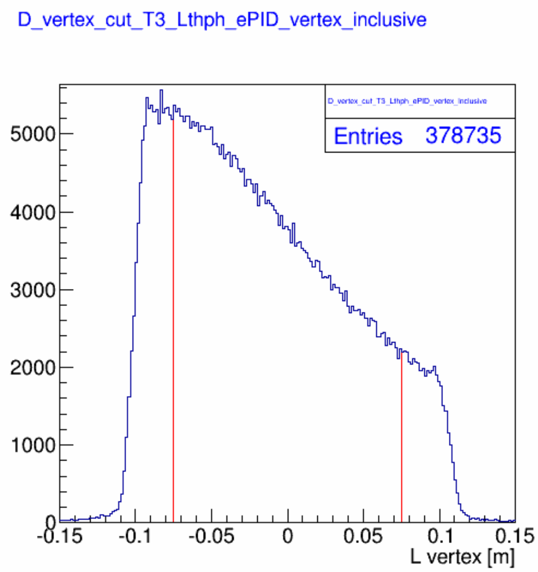
<table>
<tr><td>LD2 data (run 2975,2976)</td><td>He4 data</td></tr>
<tr><td>Cut_3: (add)
vertex cut at |rpl.z|<=0.075 m</td><td></td></tr>
<tr><td>


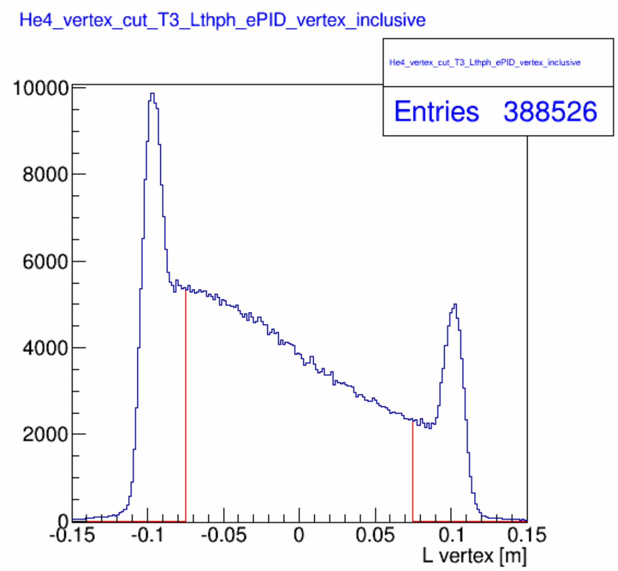
Figure 3.1: Vertex cut at +/- 7.5 cm
</td><td>


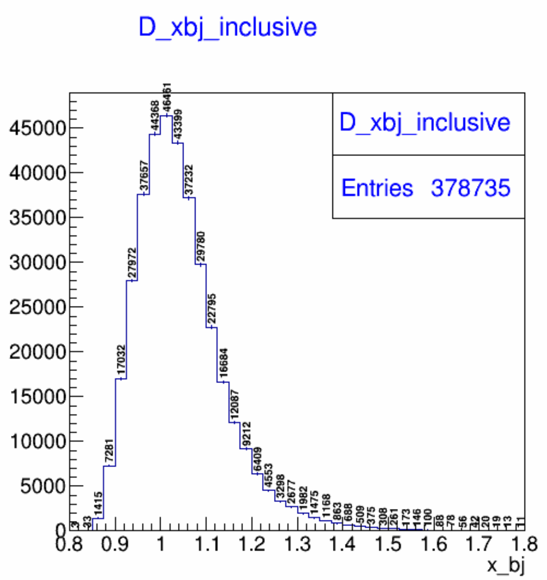
Figure 3.2: Vertex cut at +/- 7.5 cm
</td></tr>
<tr><td>Raw x_bj</td><td>Raw x_bj</td></tr>
<tr><td>


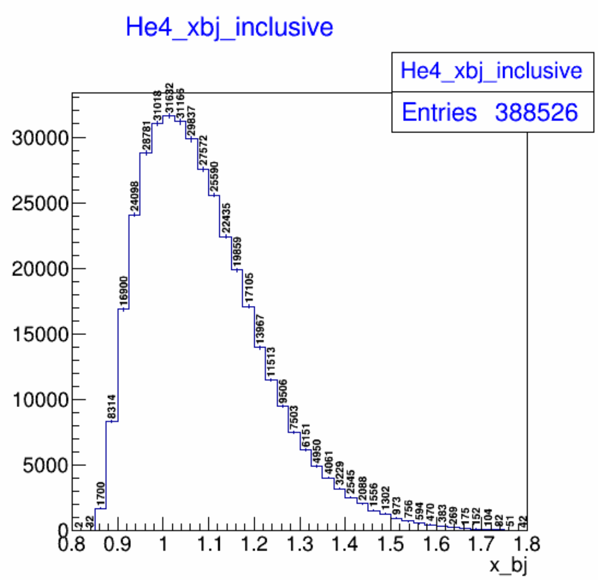
Figure 4.1: x_bj
</td><td>


Figure 4.2: x_bj
</td></tr>
</table>

Now Let add more data into He4 and also calculate the cross section for each target

		He4 Kin12	**Ld2**
parameter	**unit**	**value**	**value**
Target Density	g/cm^3	0.0338	0.1676
Target Length	cm	1.500E+01	1.500E+01
N_A	atom/mol	6.020E+23	6.020E+23
A_z	g/mol	4	2
(Target Density)(target Length)*N_A/A_z*	*(g/cm^3)*(cm)*(atom/mol)*(mol/g) =atom/cm^2*	*7.638E+22*	*7.565E+23*
Total Charge	C	2.274E+00	6.502E-03
Electron charge	C/electron	1.600E-19	1.600E-19
N_electron = (Total Charge)/(electron charge)	*(C)/(C/electron) =electron*	*1.421E+19*	*4.064E+16*
N_electron_target_area_number_density = [(Total Charge)/(electron Charge)] *[(Target Density)*(target Length)*N_A/A_z]	**electron*atom*cm^-2**	**1.085E+42**	**3.074E+40**
dE_electron	GeV	3.100E-01	3.100E-01
sin(L_angle)		3.469E-01	3.469E-01
L_theta	rad	0.12	0.12
L_phi	rad	0.06	0.06
dE_e*d2_omega_e = dE_electron*sin(L_angle)*L_theta*L_phi	**GeV*srad**	7.744E-04	7.744E-04
Factor = (dE_e*d2_omega_e)^-1* (N_electron_target_area_number_density)^-1	**cm^2/[GeV*srad*electron*atom]**	1.190E-39	4.201E-38
[1 Barn = 1e-24 cm^2]	**barn/[GeV*srad*electron*atom]**	1.190E-15	4.201E-14
[1 nBarn = 1e-33 cm^2]	**nbarn/[GeV*srad*electron*atom]**	1.190E-06	4.201E-05
cross section = factor *N_pass_cut			

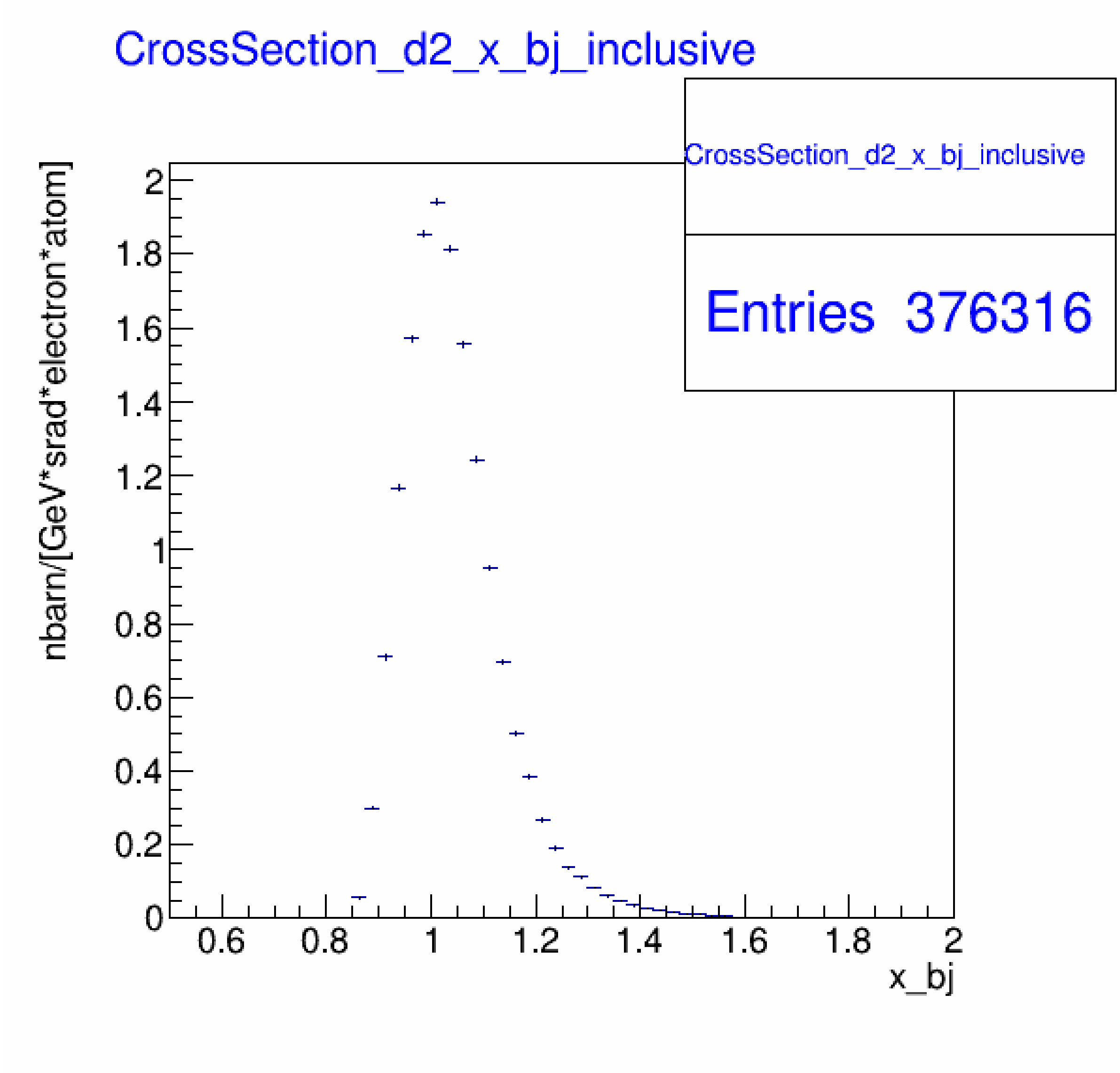


Figure A1: Inclusive cross section d2(e,e')

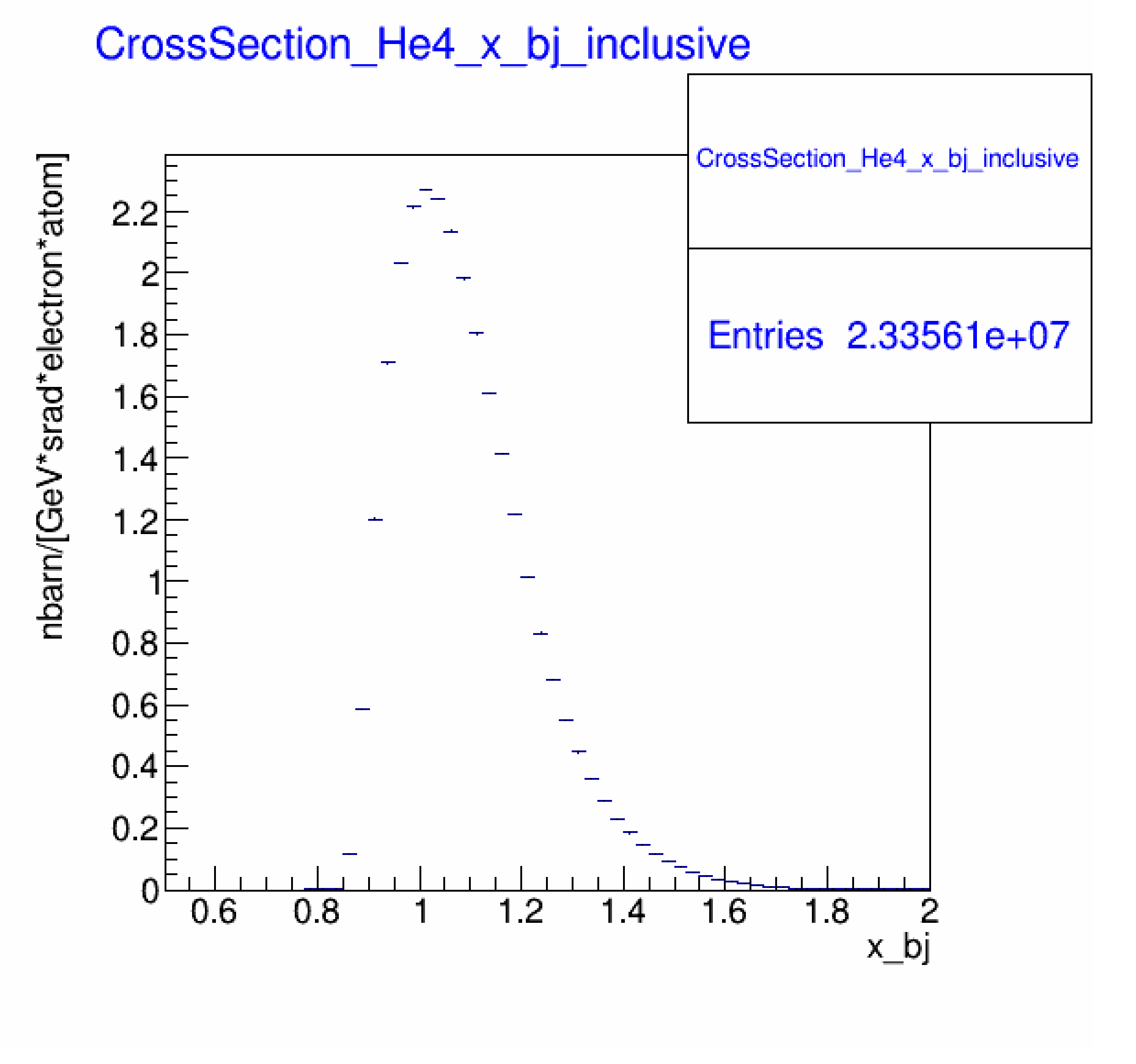


Figure A2: Inclusive cross section He(e,e')

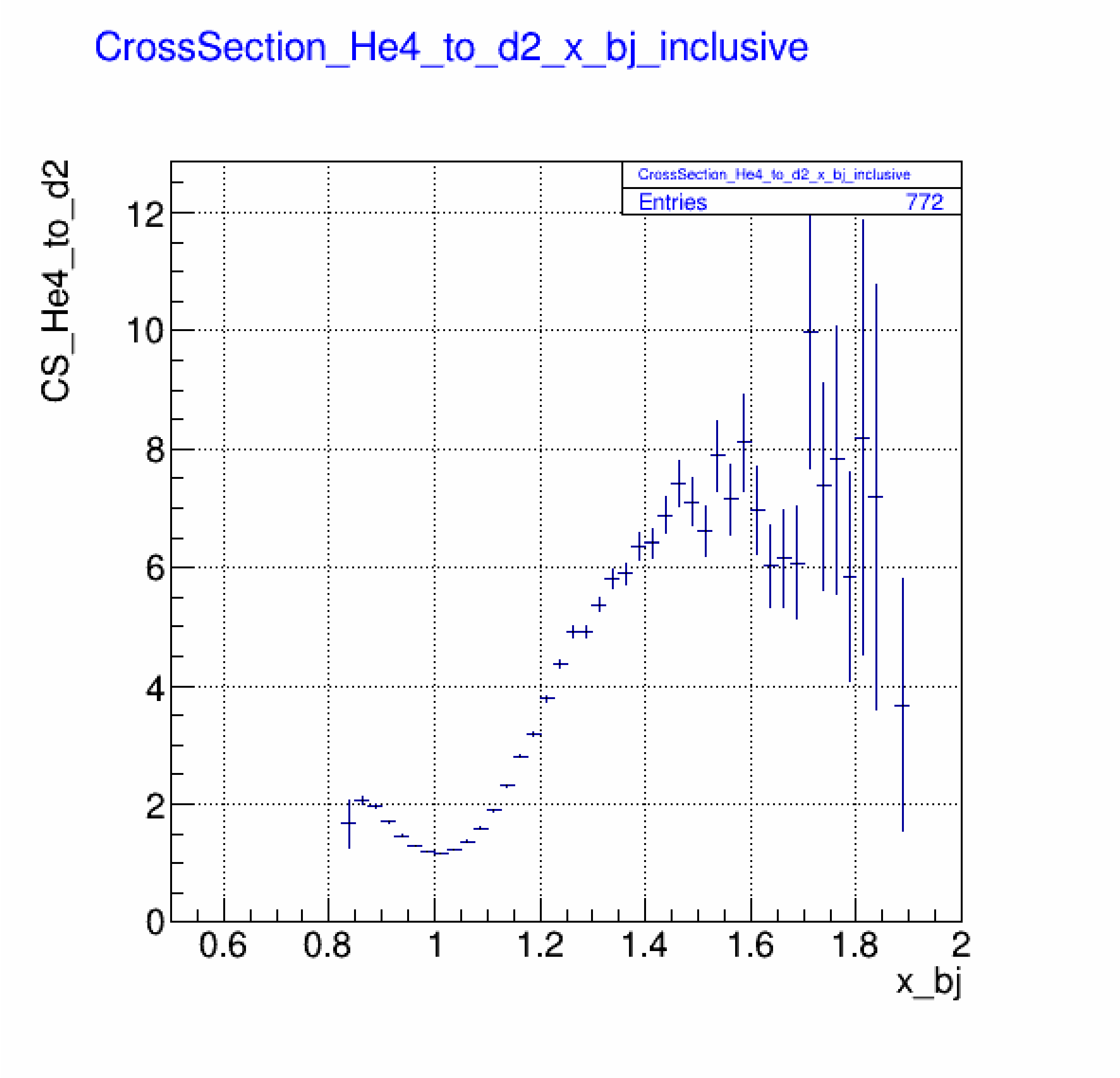


Figure A3: Cross Section ratio of He4 to d2

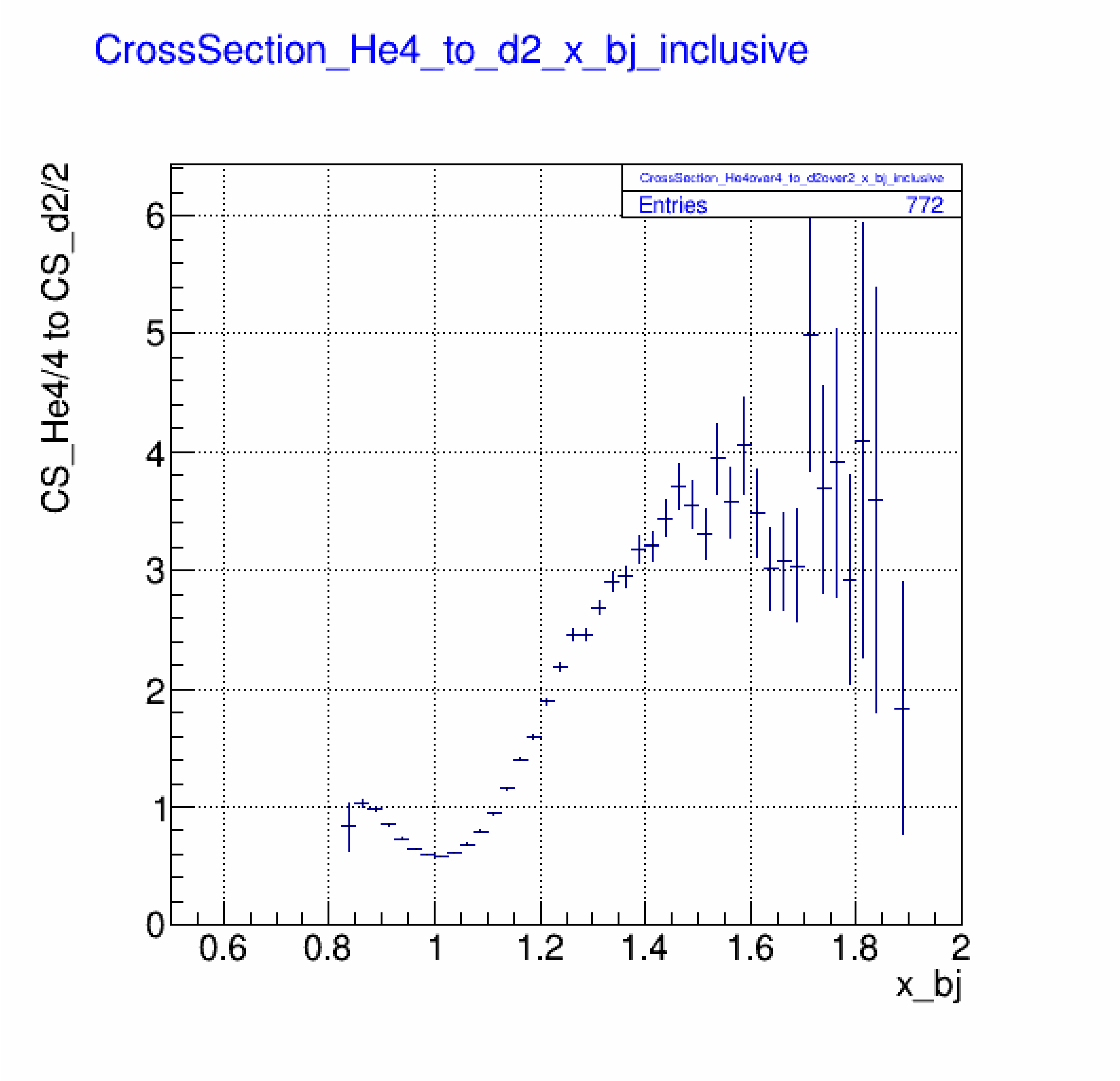


Figure A4: Cross Section ratio of He4/4 to d2/2

The value of a2(He4) is 3.3+/- 0.5

The option for additional data for d2 is with the 10 cm target runs, (2814-6),(3171-8).
This case, the cut on the vertex need to be around +/-2.5 cm.

		Ld2 (2975-6)+(2814-6)	He4 Kin12
parameter	**unit**	**value**	**value**
Target Density	g/cm^3	0.1676	0.0338
Target Length	cm	5.000E+00	5.000E+00
N_A	atom/mol	6.020E+23	6.020E+23
A_z	g/mol	2	4
(Target Density)(target Length)*N_A/A_z*	*(g/cm^3)*(cm)*(atom/mol)*(mol/g) =atom/cm^2*	*2.522E+23*	*2.546E+22*
Total Charge	C	6.502E-03	2.274E+00
Electron charge	C/electron	1.600E-19	1.600E-19
N_electron = (Total Charge)/(electron charge)	*(C)/(C/electron) =electron*	*4.064E+16*	*1.421E+19*
N_electron_target_area_number_density = [(Total Charge)/(electron Charge)] *[(Target Density)*(target Length)*N_A/A_z]	**electron*atom*cm^-2**	**1.025E+40**	**3.618E+41**
dE_electron	GeV	3.100E-01	3.100E-01
sin(L_angle)		3.469E-01	3.469E-01
L_theta	rad	0.12	0.12
L_phi	rad	0.06	0.06
dE_e*d2_omega_e = dE_electron*sin(L_angle)*L_theta*L_phi	**GeV*srad**	7.744E-04	7.744E-04
Factor = (dE_e*d2_omega_e)^-1* (N_electron_target_area_number_density)^-1	**cm^2/[GeV*srad*electron*atom]**	1.260E-37	3.569E-39
[1 Barn = 1e-24 cm^2]	**barn/[GeV*srad*electron*atom]**	1.260E-13	3.569E-15
[1 nBarn = 1e-33 cm^2]	**nbarn/[GeV*srad*electron*atom]**	1.260E-04	3.569E-06
cross section = factor *N_pass_cut			

data needed for C12
2977-2984

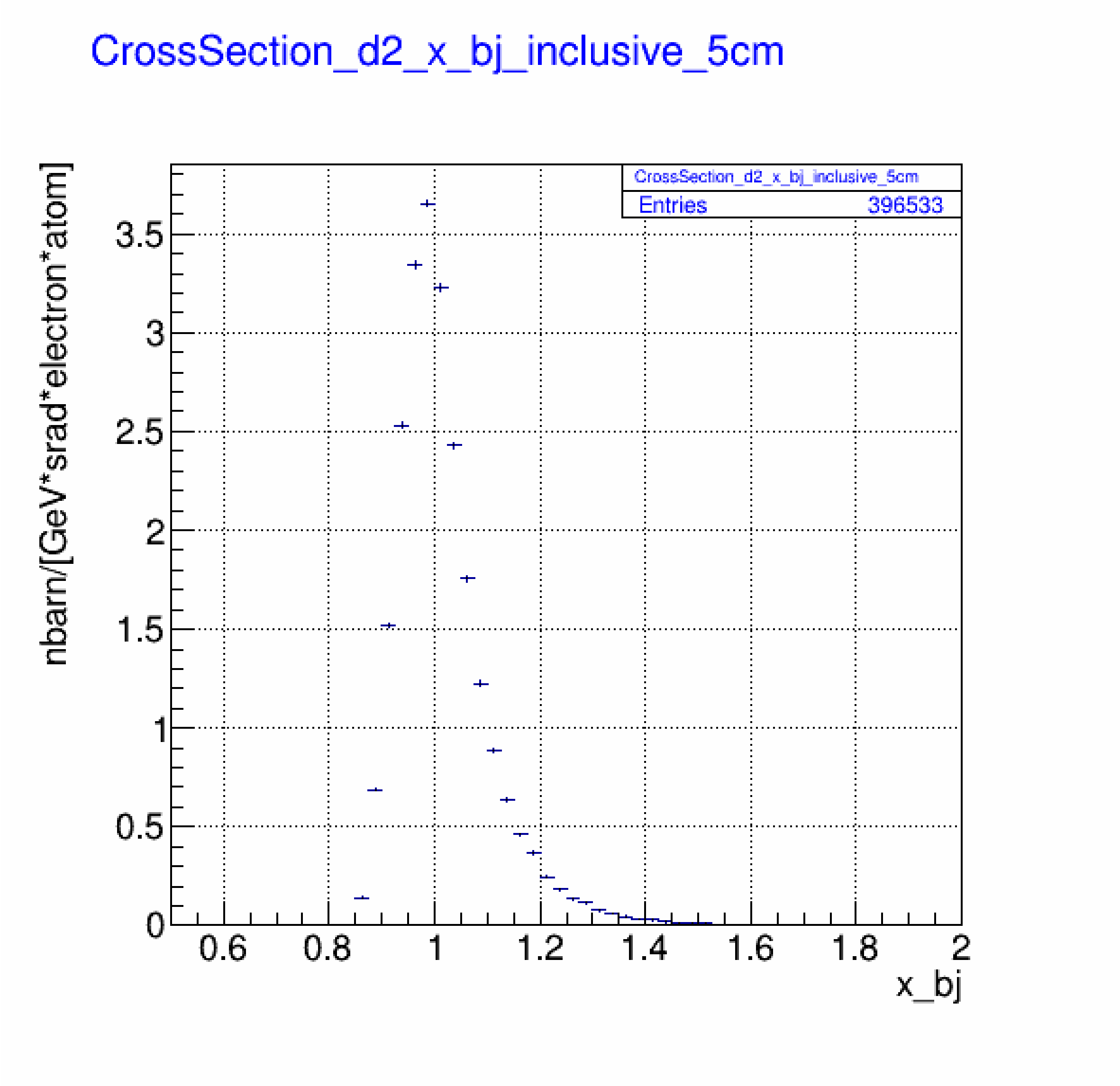


Figure B1: Inclusive cross section d2(e,e')

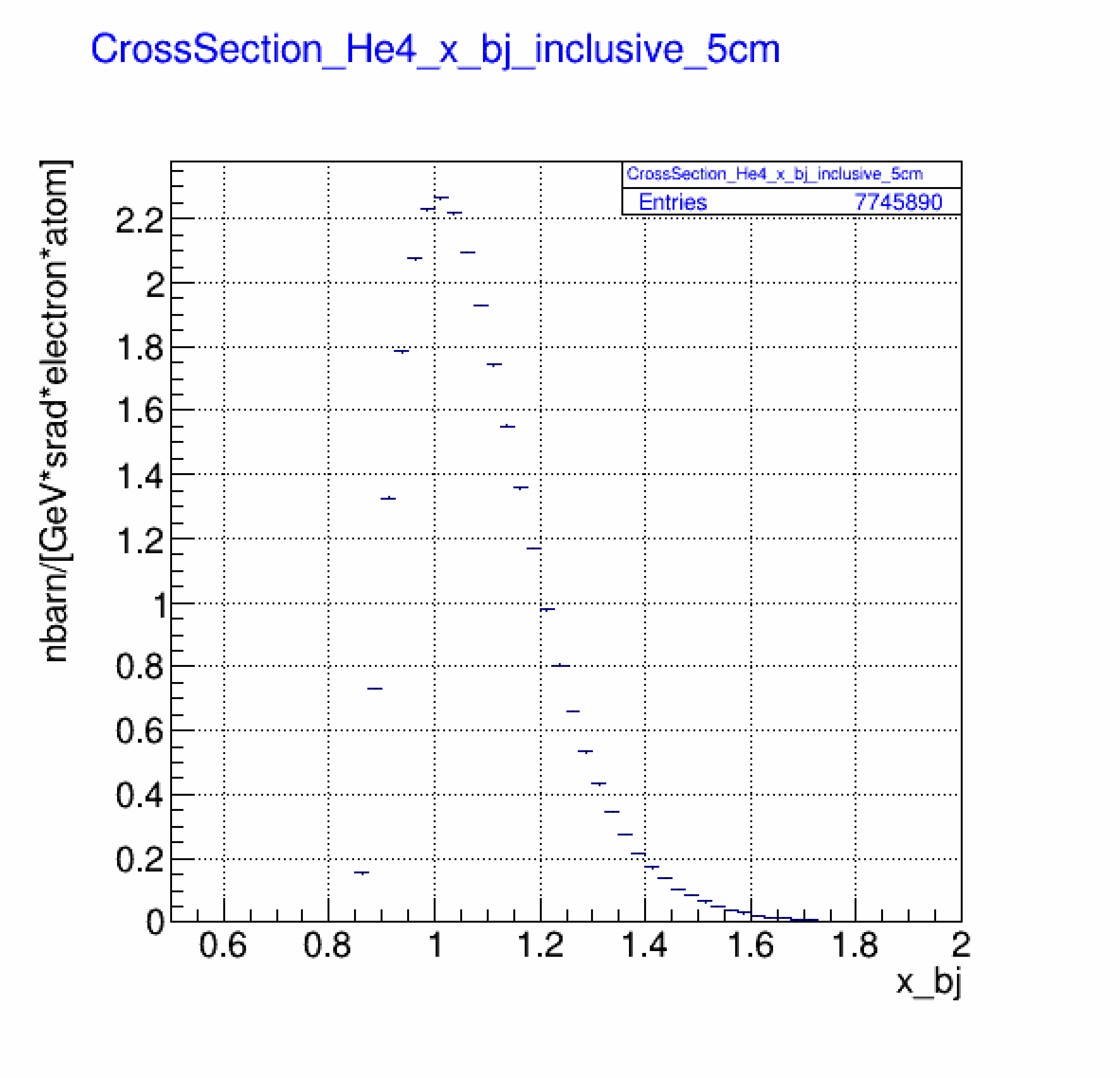


Figure B2: Inclusive cross section He4(e,e')

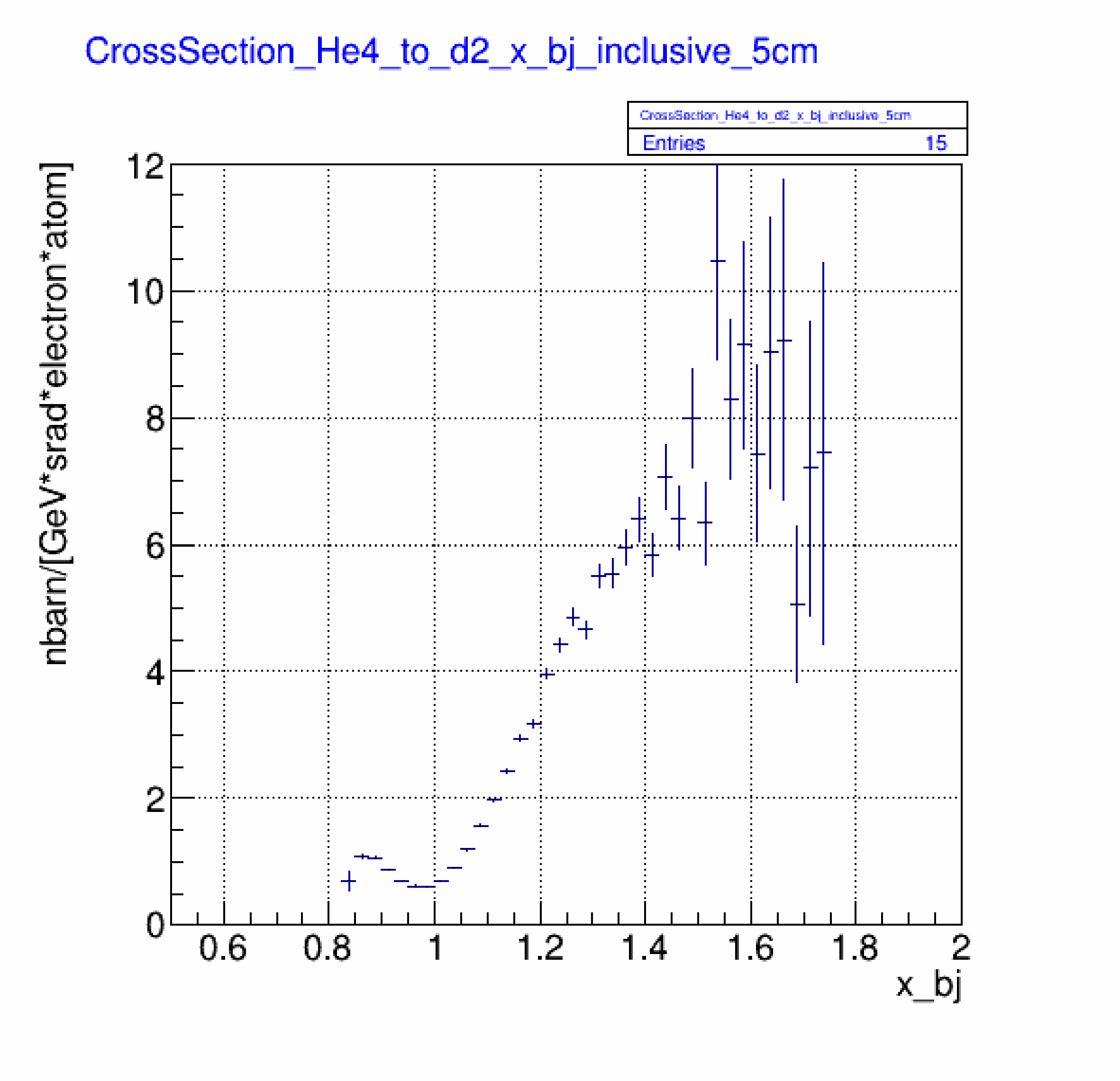


Figure B3: Cross Section ratio of He4 to d2

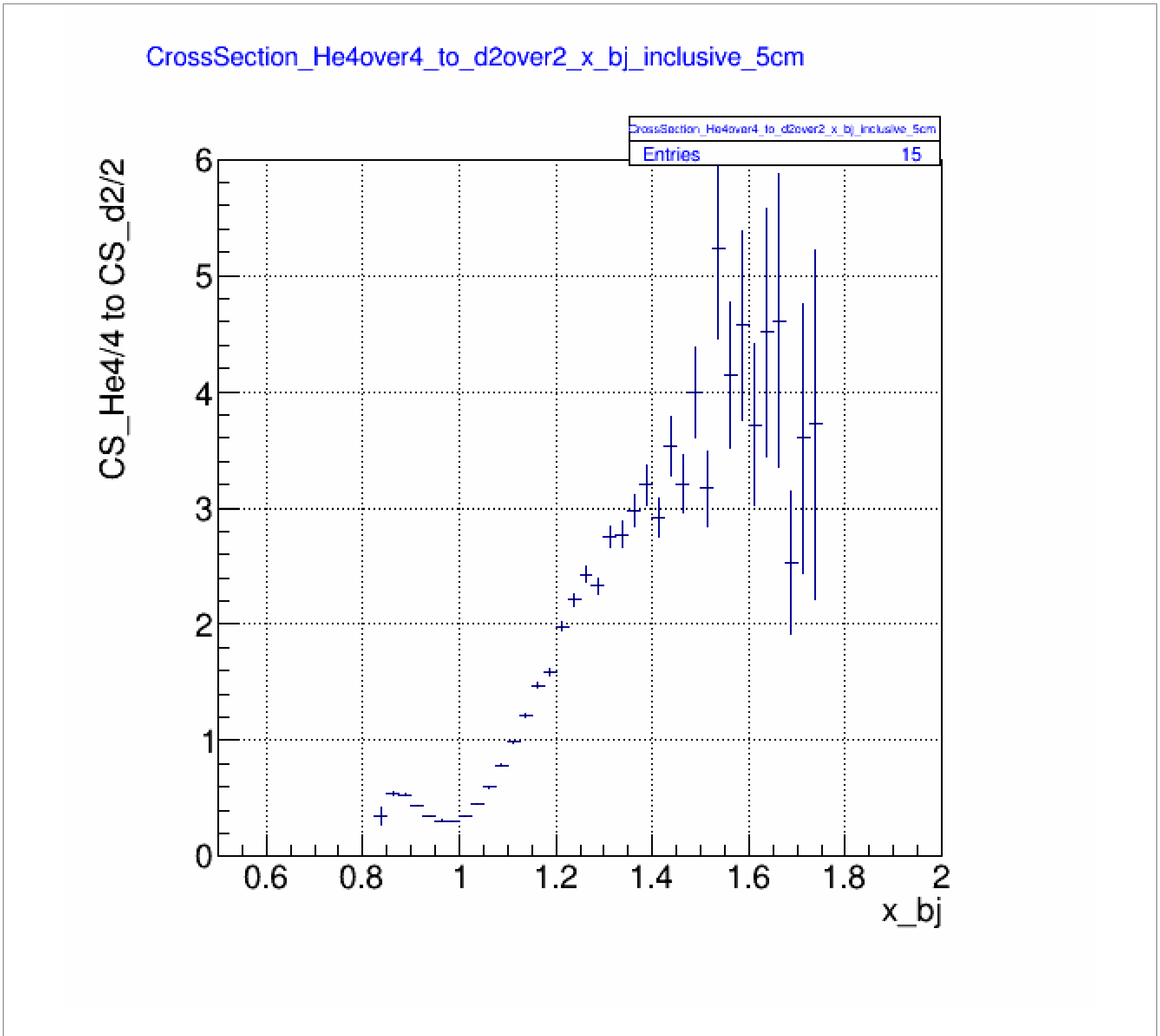


Figure A4: Cross Section ratio of He4/4 to d2/2

Now consider the ratio of the semi-inclusive X(e,e'p)
With T3, no edtm, both end cut of DBB.l1a (to take out the outside timing for BB)
electron PID (prl_sum/p>=0.7 && L.tr.n==1)
proton PID (graphic cut E_p)
CT (10 ns window)
CT bg (6*10 ns window and scale down by 6)

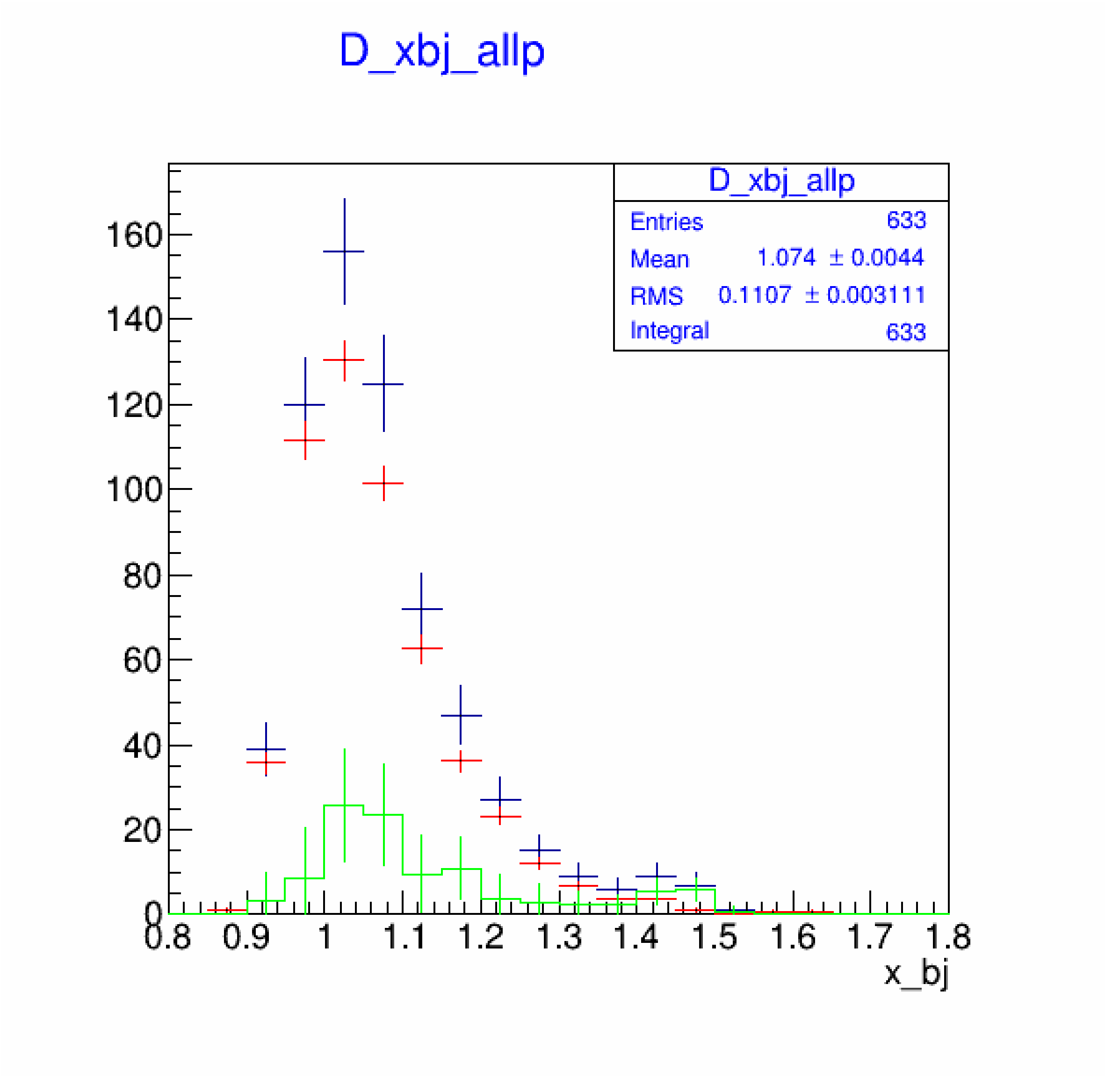


Figure C1: x_bj for d2(e,e'p_back)

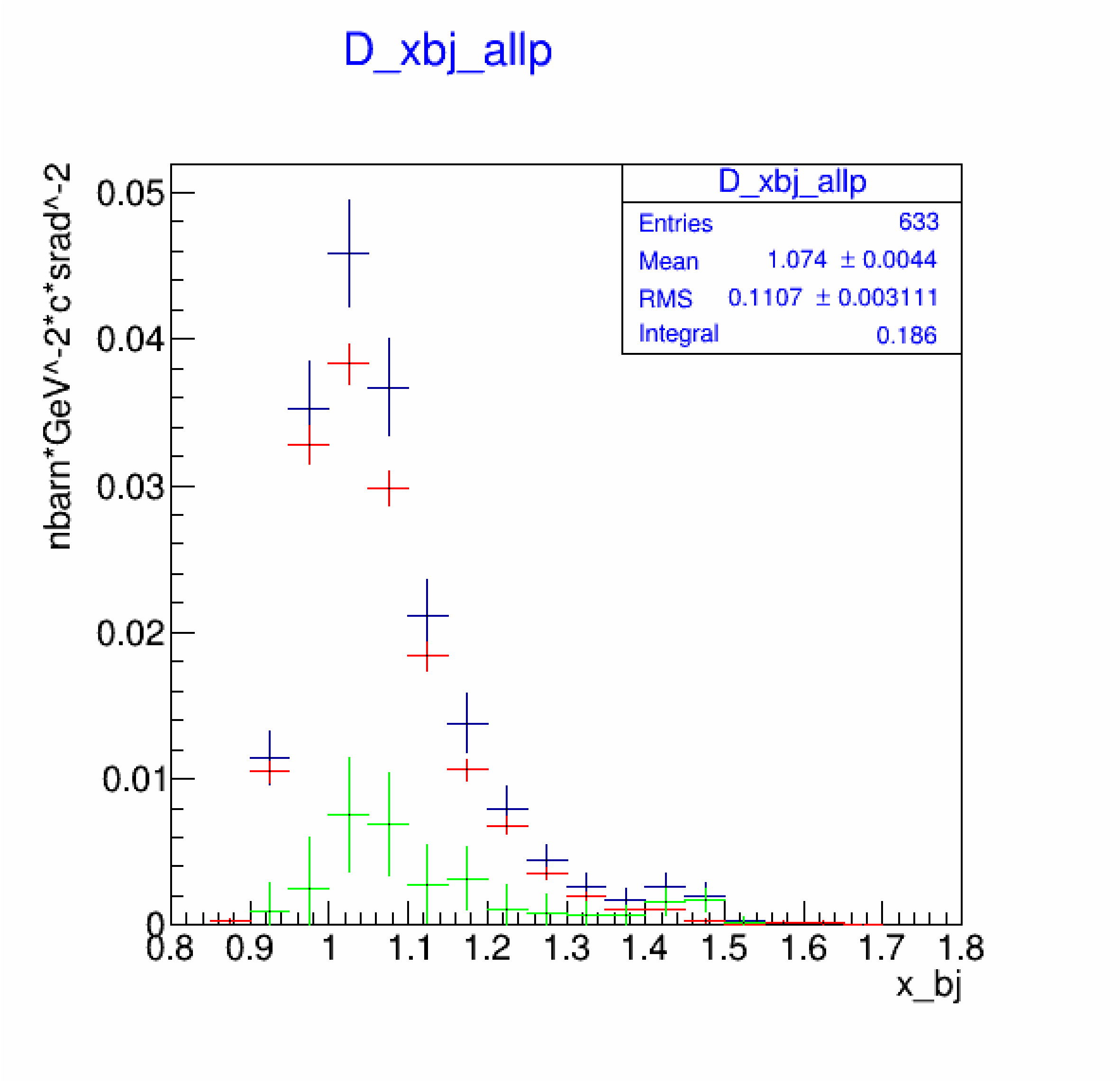


Figure C2: CS x_bj for d2(e,e'p_back)

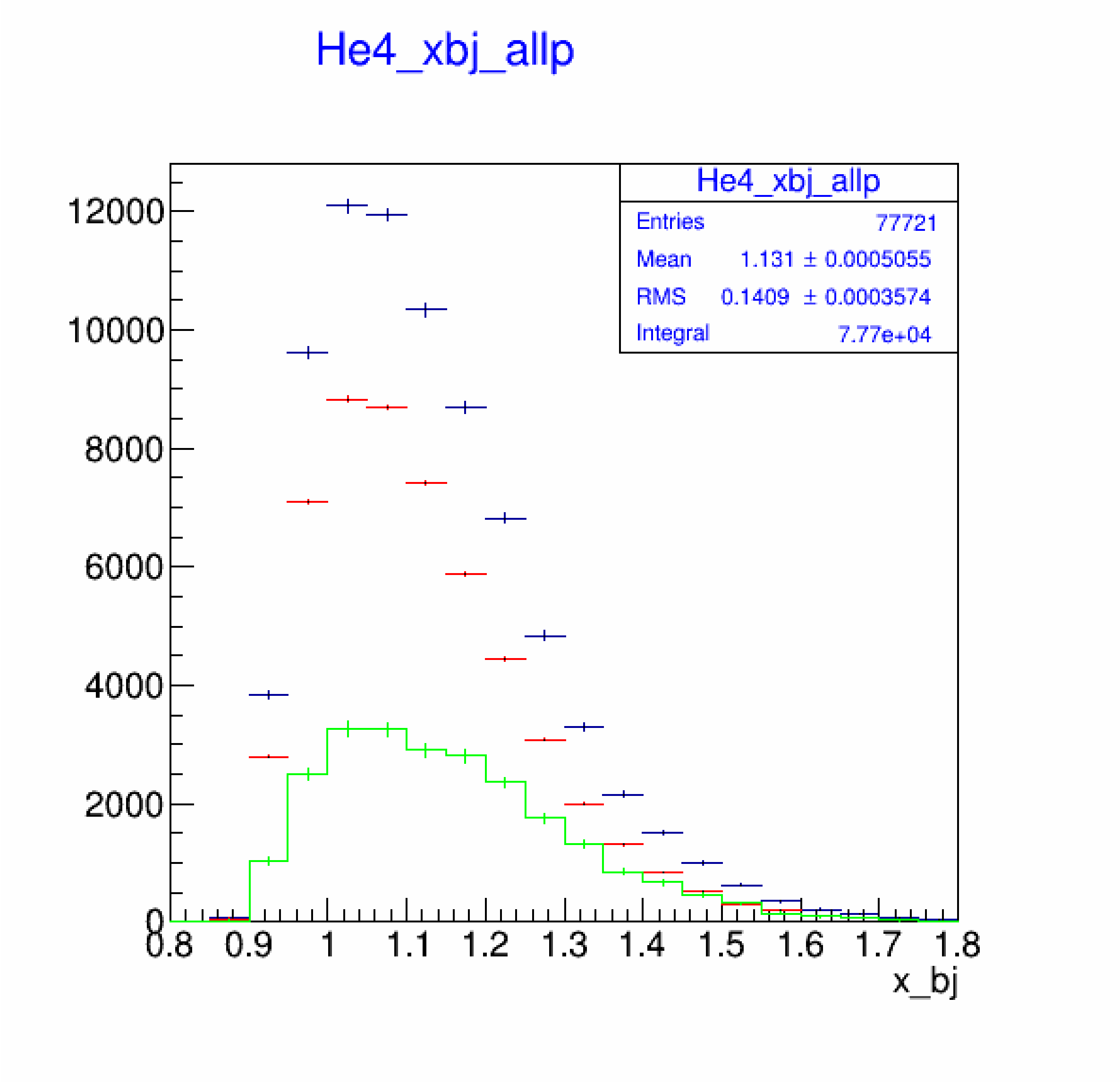


Figure C3: x_bj for He4(e,e'p_back)

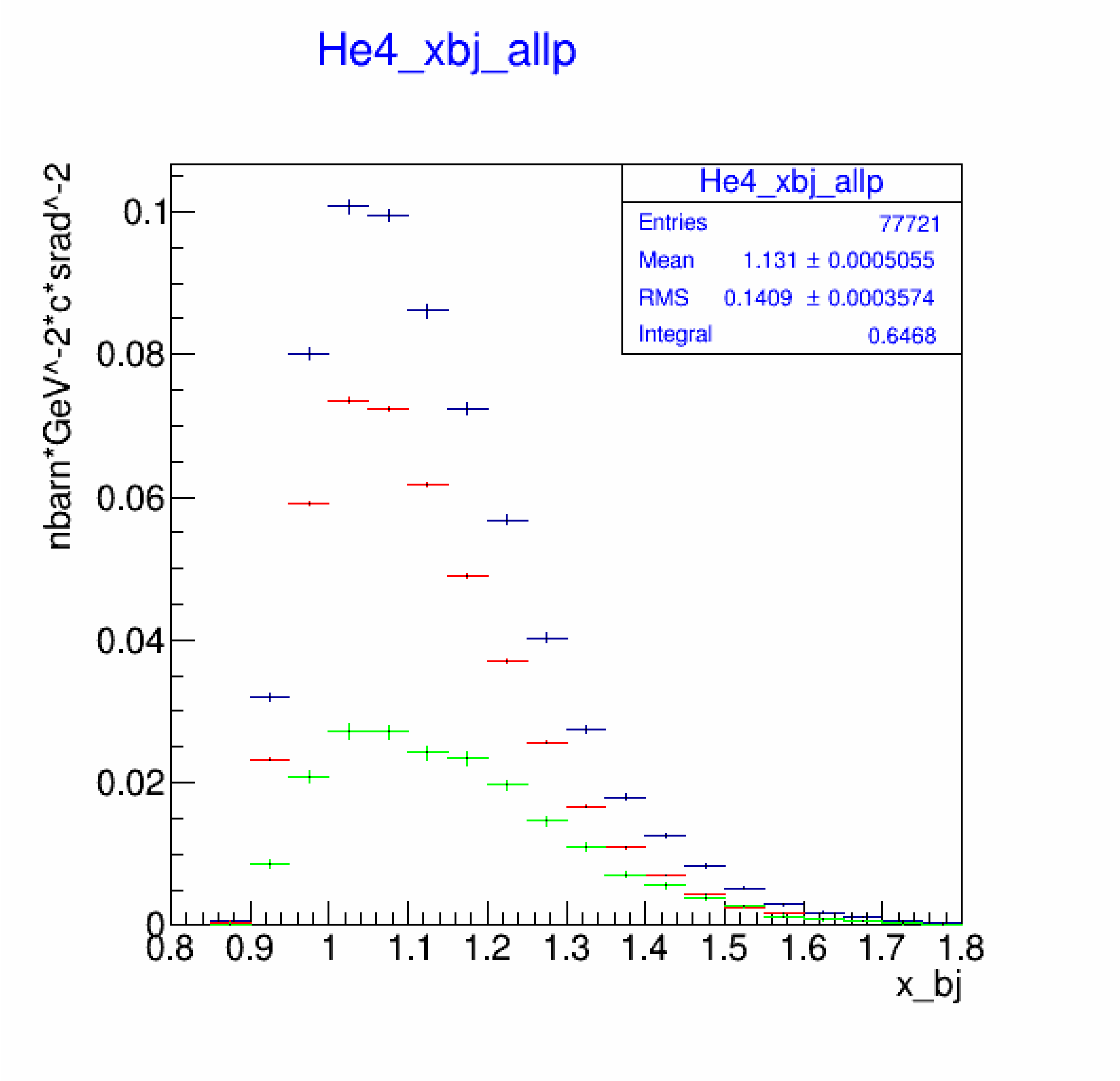


Figure C5: CS x_bj for He4(e,e'p_back)

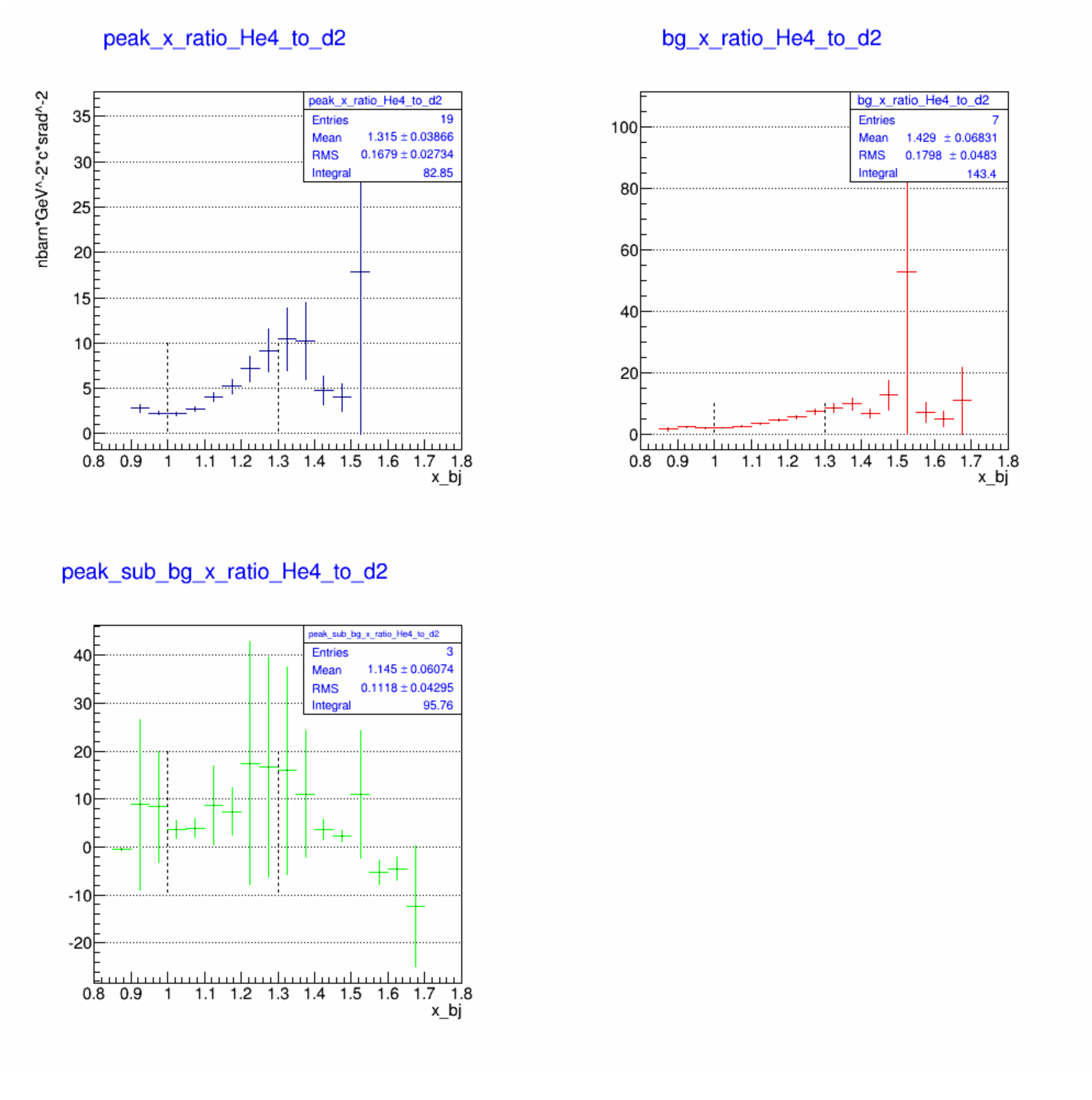


Figure C6: Cross section ratio for
He4(e,e'p_back) to
d2(e,e'p_back)
blue: CT, red: BG, green: CT-BG

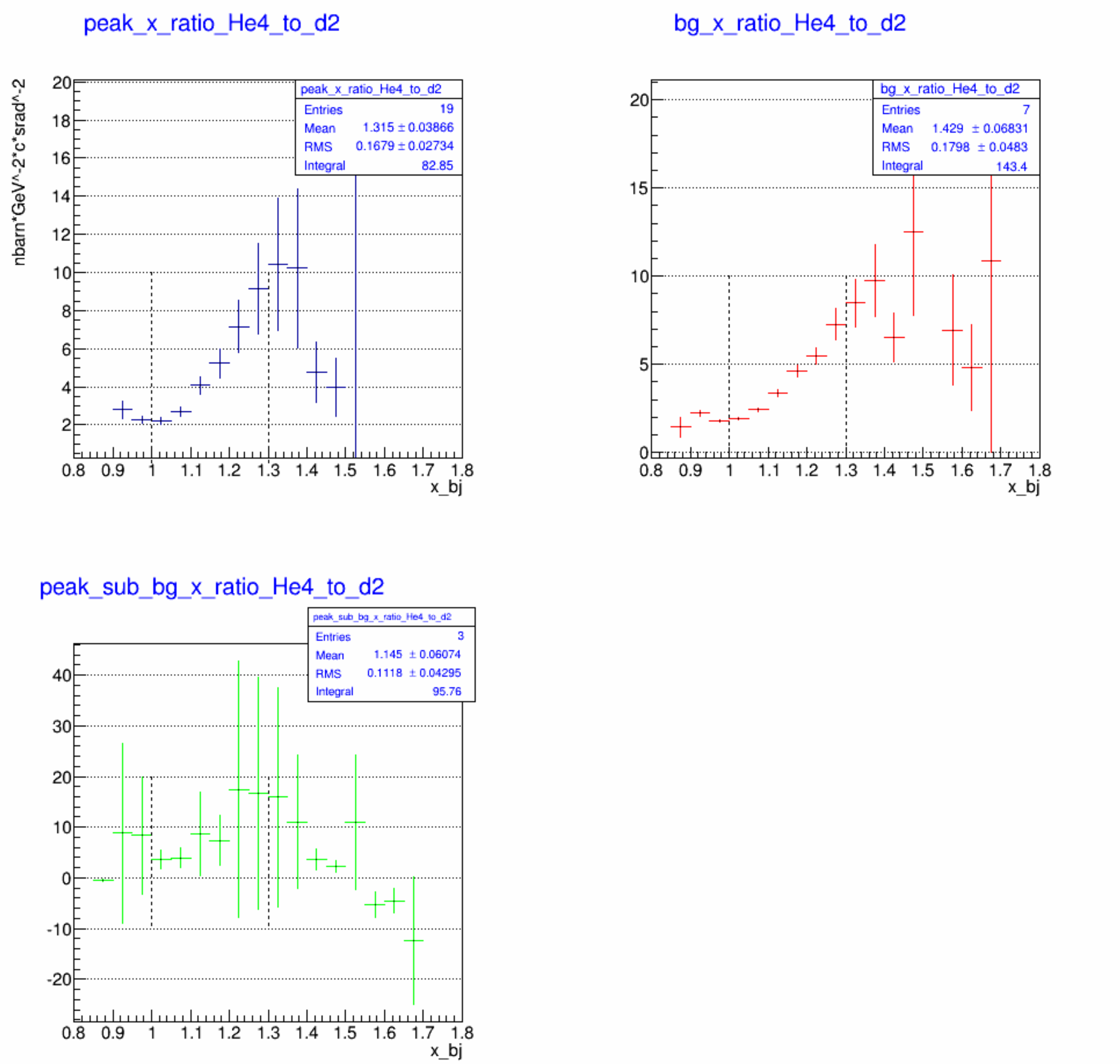


Figure C6.2 (zoom): Cross section ratio for
He4(e,e'p_back) to
d2(e,e'p_back)
blue: CT, red: BG, green: CT-BG

If I also add the Coincidence vertex cut |L_z-BB_z|<=0.06

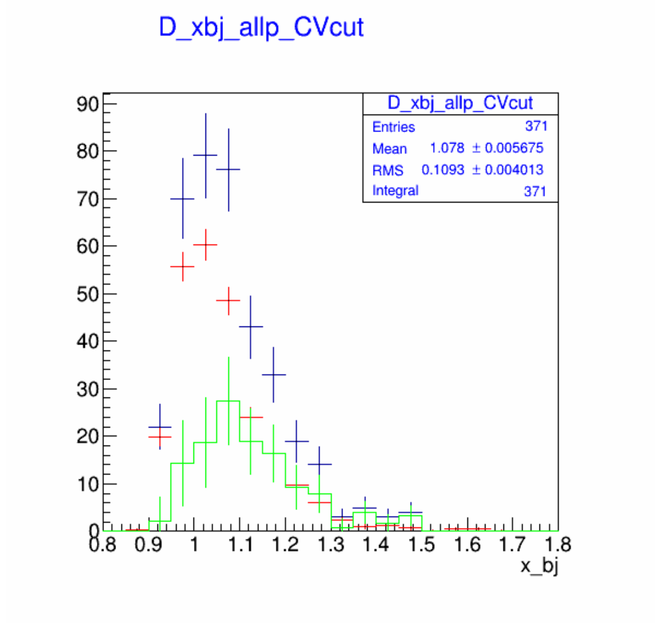


Figure 7.1: d2(e,e'p_back)

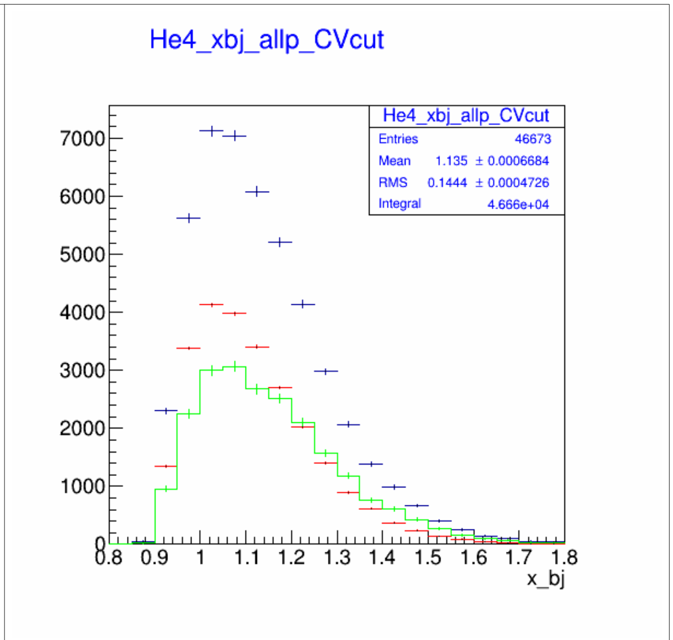


Figure 7.2: He4(e,e'p_back)

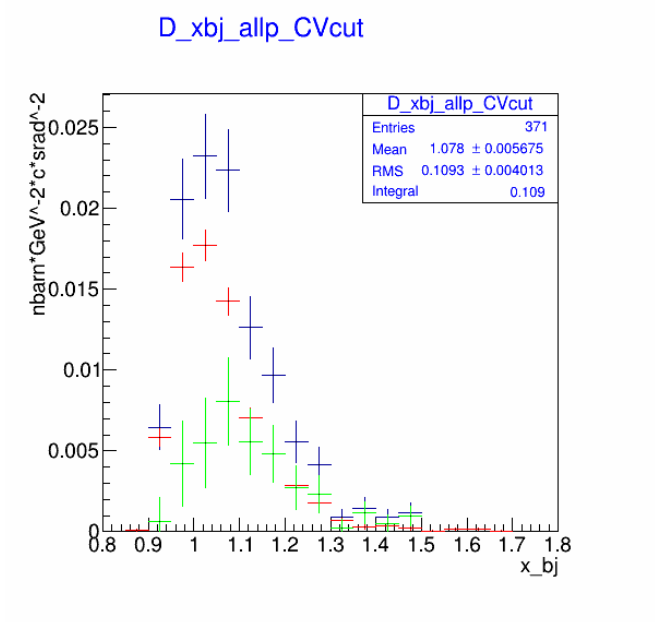


Figure 7.1: CS d2(e,e'p_back)

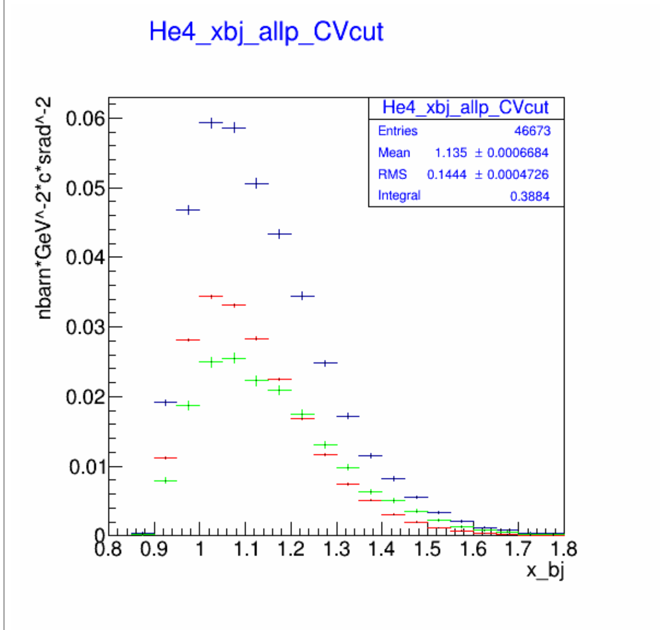


Figure 7.2: CS He4(e,e'p_back)

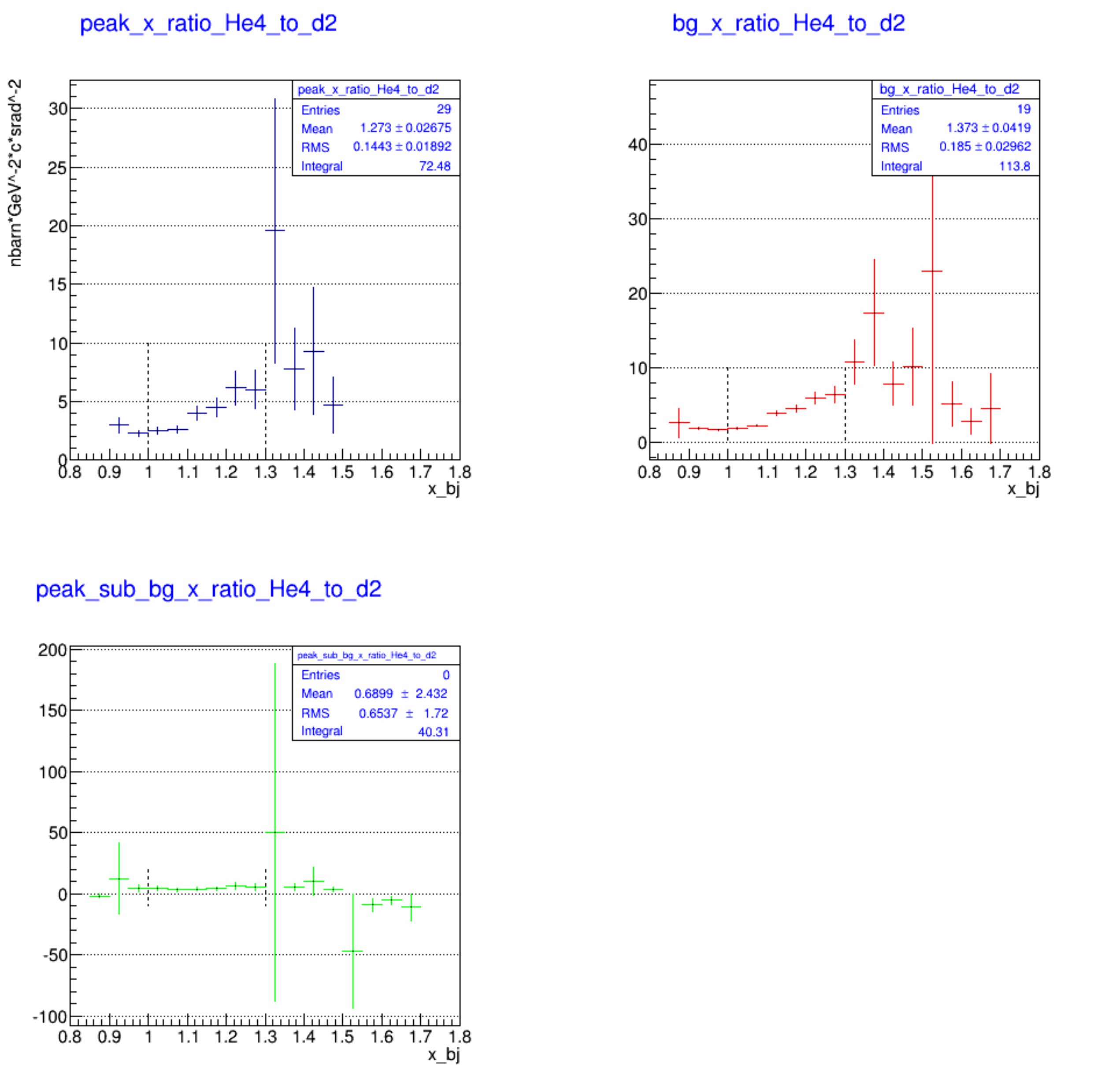


Figure C 8: Cross section ratio for
He4(e,e'p_back) to
d2(e,e'p_back)
blue: CT, red: BG, green: CT-BG

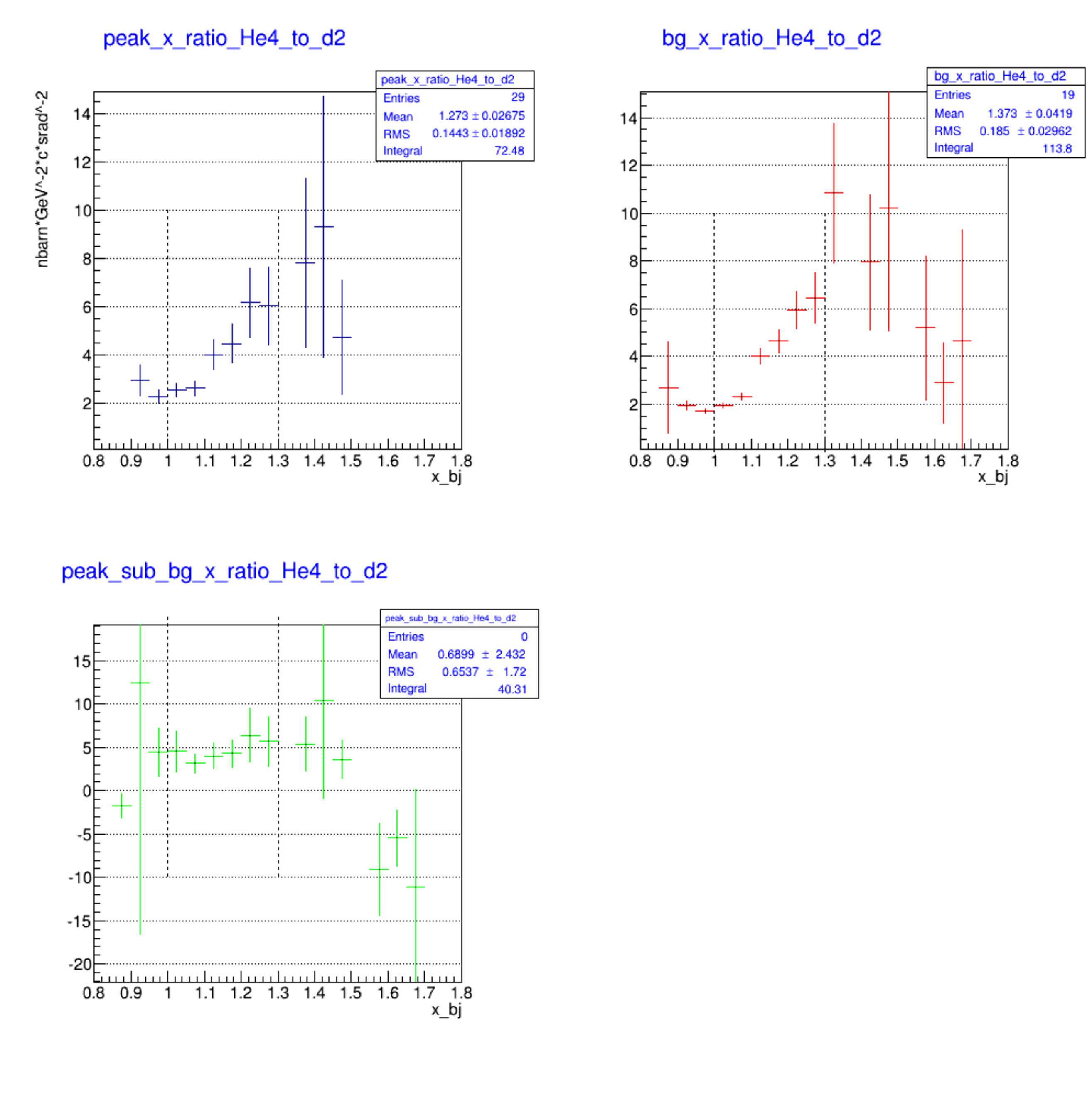


Figure C 8.2(zoom): Cross section ratio for
He4(e,e'p_back) to
d2(e,e'p_back)
blue: CT, red: BG, green: CT-BG