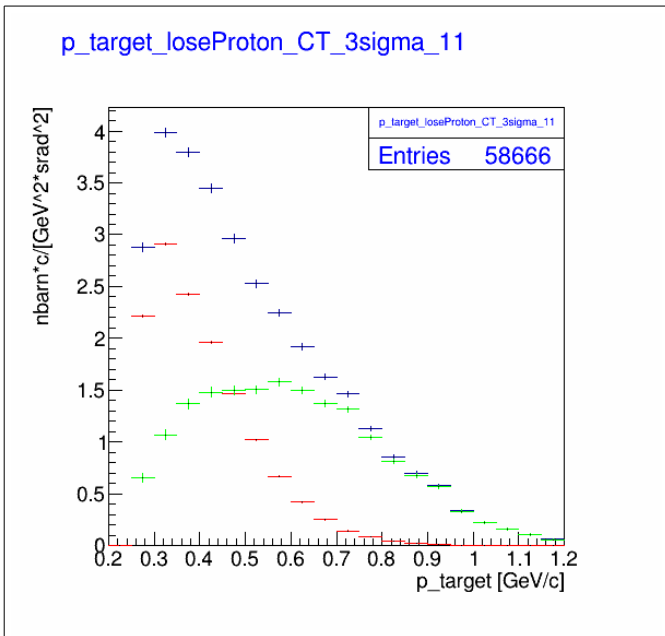
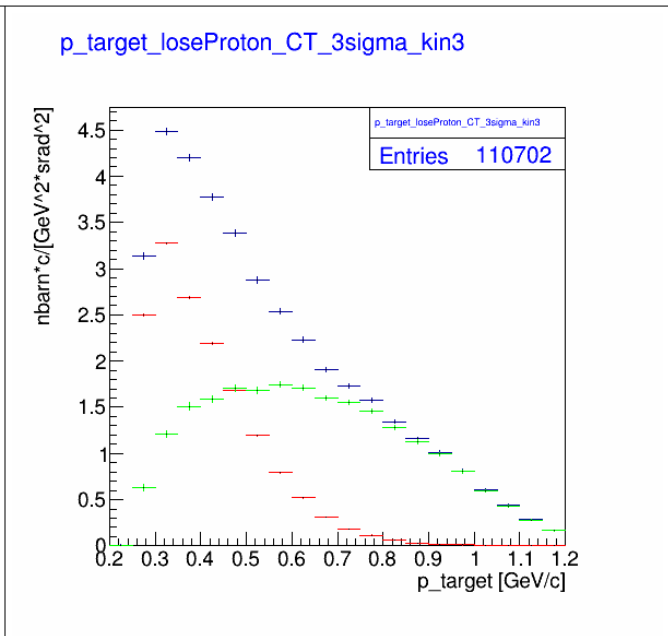


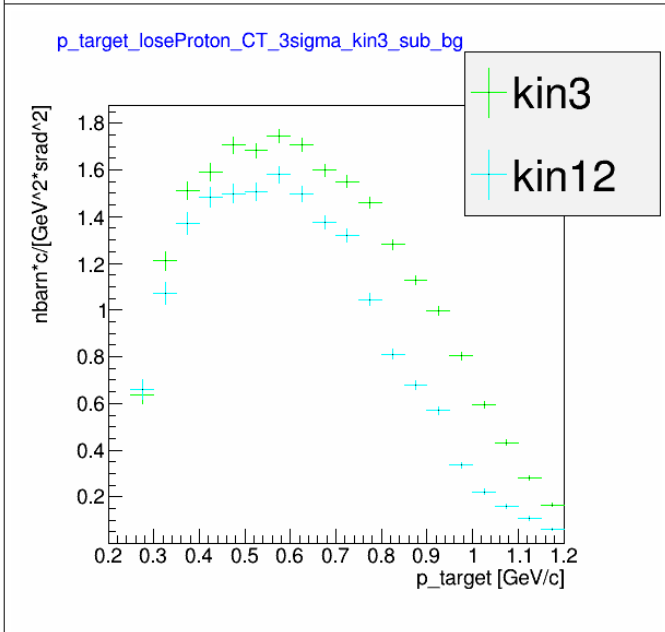
# Cross section He4 Kin 12 (97 deg) and Kin 3 (92 deg)



Cross section for Kin12



Cross section for kin3



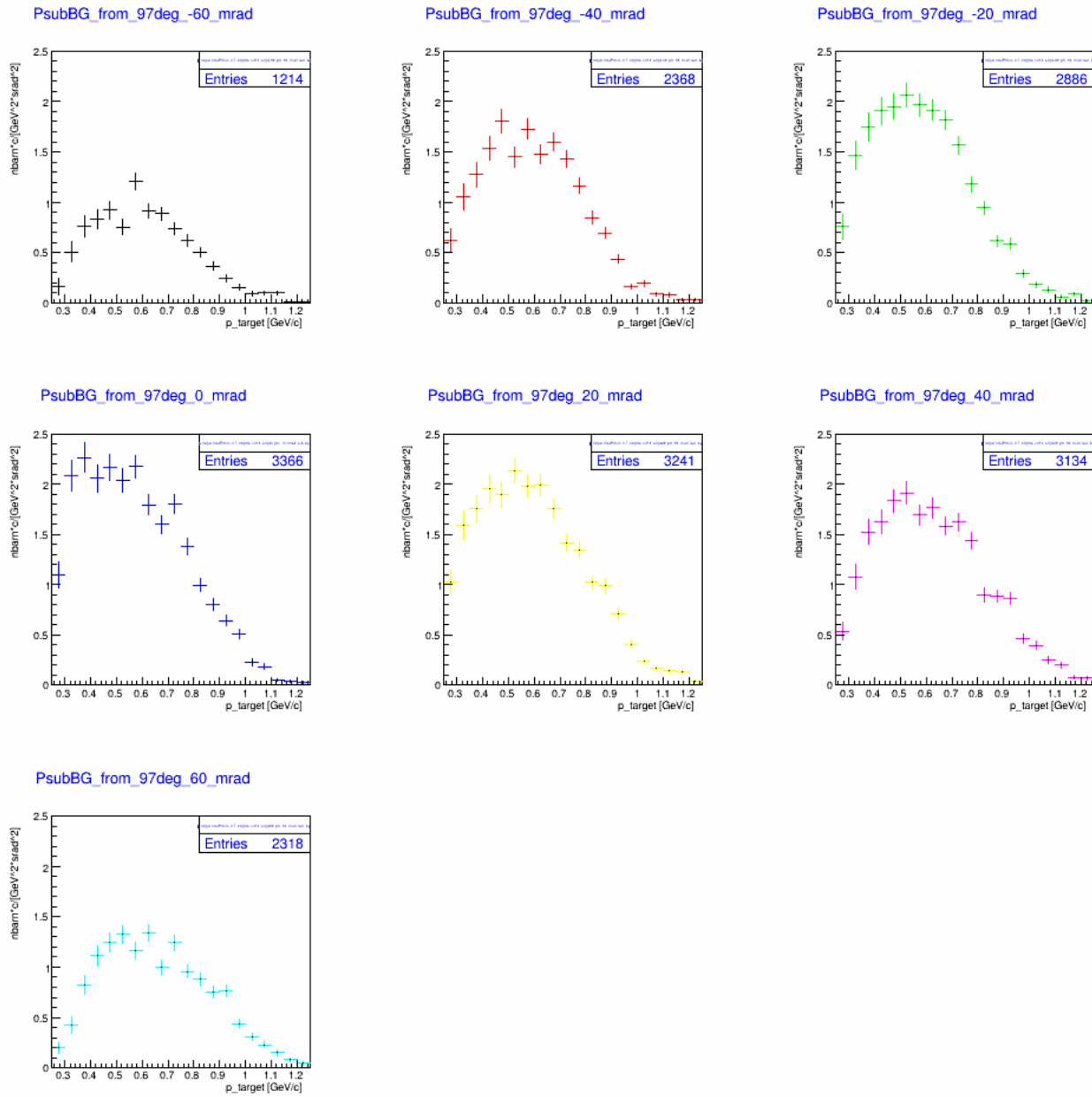
Overlay of the CS for kin12(blue) with kin3(green) of the peak sub background

With Cross Section =  
 [Number\_Entries\_for each dp\_proton\_section\*]  
 -----  
 $\{dE\_electron * \sin(L\_angle) * L\_theta * L\_phi\} * \{dp\_proton * \sin(BB\_angle) * BB\_theta * BB\_phi\} * [(Total\ Charge)/(electron\ Charge)] * [(Target\ Density) * (target\ Length) * N\_A/A\_z]$

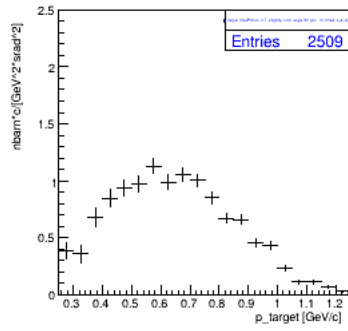
parameter	unit	He4 Kin12	He4 Kin12 per
		value	Dp_25MeV_bin value
Target Density	g/cm <sup>3</sup>	0.034	0.034
Target Length	cm	15	15
(Target Density)*(target Length)	g/cm <sup>2</sup>	0.508	0.508
N_A	atom/mol	6.020E+23	6.020E+23
A_z	g/mol	4	4
(Target Density)*(target Length)*N_A/A_z	$(g/cm^3)*(cm)$ $*(atom/mol)*(mol/g)$ $=atom/cm^2$	7.64E+22	7.64E+22
Total Charge	C	1.537175	1.537175
Electron charge	C/electron	1.60E-19	1.60E-19
$N_{electron} = (Total Charge)/(electron charge)$	$(C)/(C/electron)$ $=electron$	9.61E+18	9.61E+18
<b>N_electron_target_area_number_density</b> <b>=</b> <b>[(Total Charge)/(electron Charge)]</b> <b>*[(Target Density)*(target Length)*N_A/A_z]</b>	<b>electron*atom*cm<sup>-2</sup></b>	<b>7.34E+41</b>	<b>7.34E+41</b>
dE_electron	GeV	0.31	0.31
sin(L_angle)		0.347	0.347
L_theta	rad	0.12	0.12
L_phi	rad	0.06	0.06
<b>dE_e*d2_omega_e</b> <b>=</b> <b>dE_electron*sin(L_angle)*L_theta*L_phi</b>	<b>GeV*srad</b>	<b>7.74E-04</b>	<b>7.74E-04</b>
dp_proton [0.25 to 1.2]	GeV/c	0.95	0.025
sin(BB_angle)		0.99	0.99
BB_theta	rad	<b>0.70</b>	<b>0.70</b>
BB_phi	rad	<b>0.16</b>	<b>0.16</b>
<b>dp_pro*d2_omega_p</b> <b>=</b> <b>dp_proton*sin(BB_angle)*BB_theta*BB_phi</b>	<b>GeV/c*srad</b>	<b>1.06E-01</b>	<b>2.78E-03</b>
<b>dE_e*d2_omega_e*dp_pro*d2_omega_p</b> <b>=</b> <b>dE_electron*sin(L_angle)*L_theta*L_phi*</b> <b>dp_proton*sin(BB_angle)*BB_theta*BB_phi</b>	<b>GeV<sup>2</sup>*c<sup>-1</sup>*srad<sup>2</sup></b>	<b>8.18E-05</b>	<b>2.15E-06</b>
<b>Factor</b> <b>=</b> <b>1./(dE_e*d2_omega_e*dp_pro*d2_omega_p)</b> <b>/(N_electron_target_area_number_density)</b>	<b>cm<sup>2</sup>*c</b> ----- <b>GeV<sup>2</sup>*srad<sup>2</sup></b>	<b>1.67E-38</b>	<b>6.33E-37</b>
Factor [Barn = 1e-24 cm <sup>2</sup> ]	<b>Barn*c</b> ----- <b>GeV<sup>2</sup>*srad<sup>2</sup></b>	1.67E-14	6.33E-13
[nbarn = 1e-33 cm <sup>2</sup> ]	<b>Nbarn*c</b> ----- <b>GeV<sup>2</sup>*srad<sup>2</sup></b>	<b>1.67E-05</b>	<b>6.33E-04</b>

correction factor		He4 Kin12	He4 Kin12 per
			Dp_25MeV_bin
dead time		15.0%	15.0%
L single track efficiency		99.5%	99.5%
BB track efficiency		79.0%	79.0%
BB single track efficiency		89.5%	89.5%
<b>total correction factor</b>		<b>1.67</b>	<b>1.67</b>
<b>Factor &amp; correction factor for 3 sigma cut</b>	<b>Nbarn*c</b> ----- <b>GeV<sup>2</sup>*srad<sup>2</sup></b>	<b>2.79E-05</b>	<b>1.06E-03</b>
<b>For 2sigma cut</b>	<b>Nbarn*c</b> ----- <b>GeV<sup>2</sup>*srad<sup>2</sup></b>	<b>2.92E-05</b>	<b>1.11E-03</b>

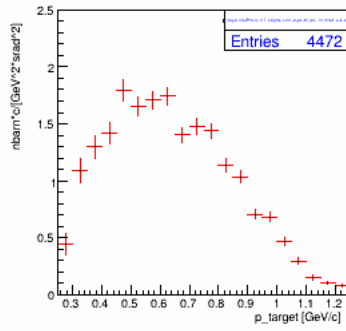
# Angle Dependent with actual center at 97 degree for kin 12



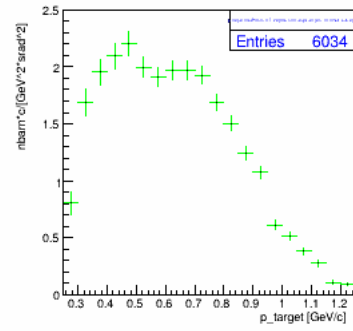
PsubBG\_from\_92deg\_-60\_mrad



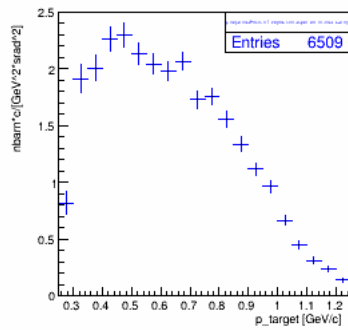
PsubBG\_from\_92deg\_-40\_mrad



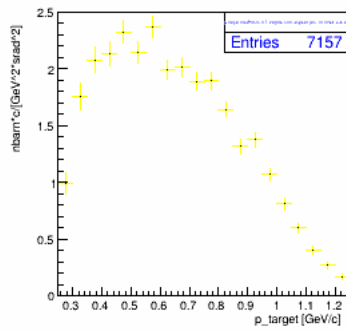
PsubBG\_from\_92deg\_-20\_mrad



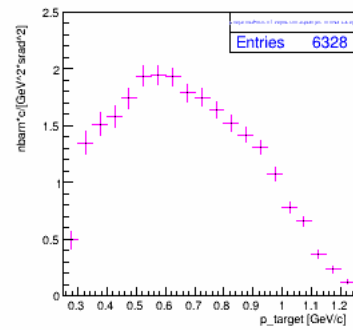
PsubBG\_from\_92deg\_0\_mrad



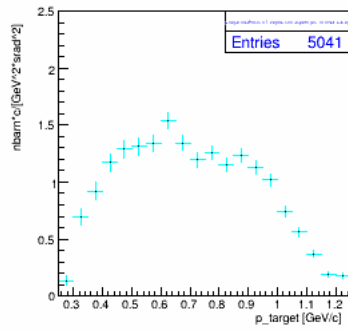
PsubBG\_from\_92deg\_20\_mrad



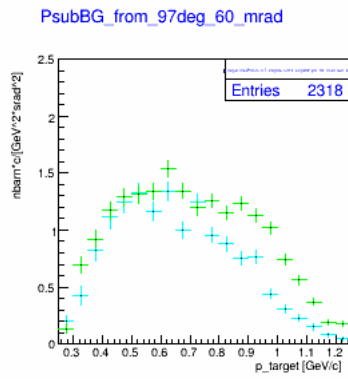
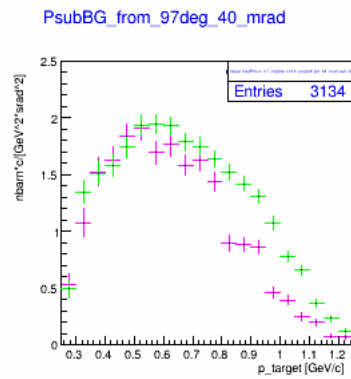
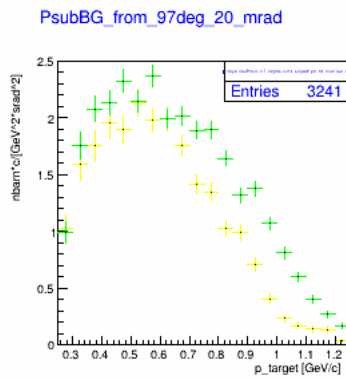
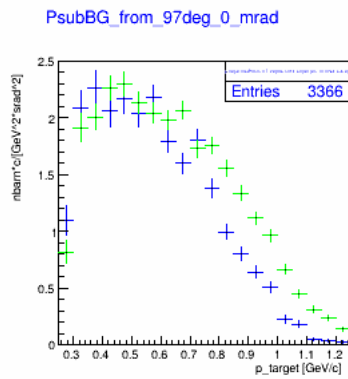
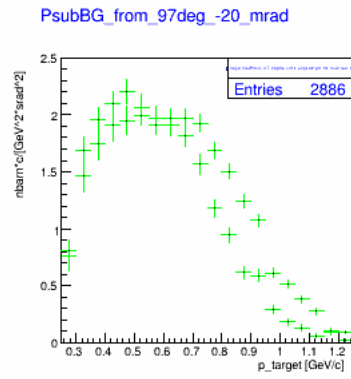
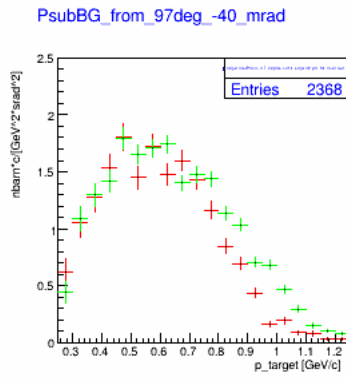
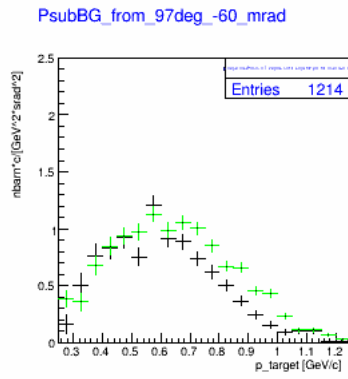
PsubBG\_from\_92deg\_40\_mrad



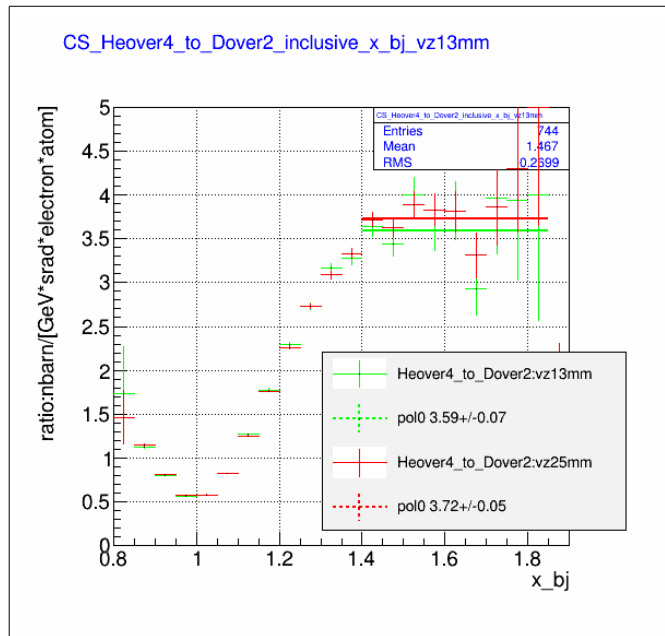
PsubBG\_from\_92deg\_60\_mrad



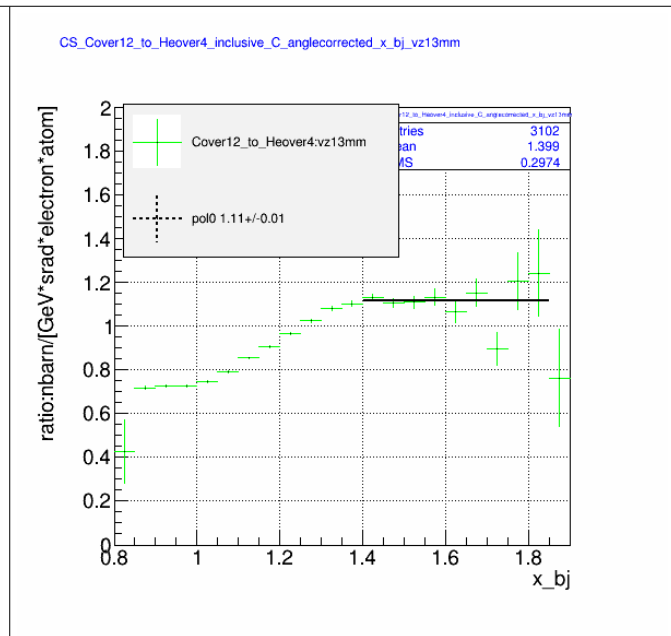
Overlay: kin 12 in multi colors kin 3 in green



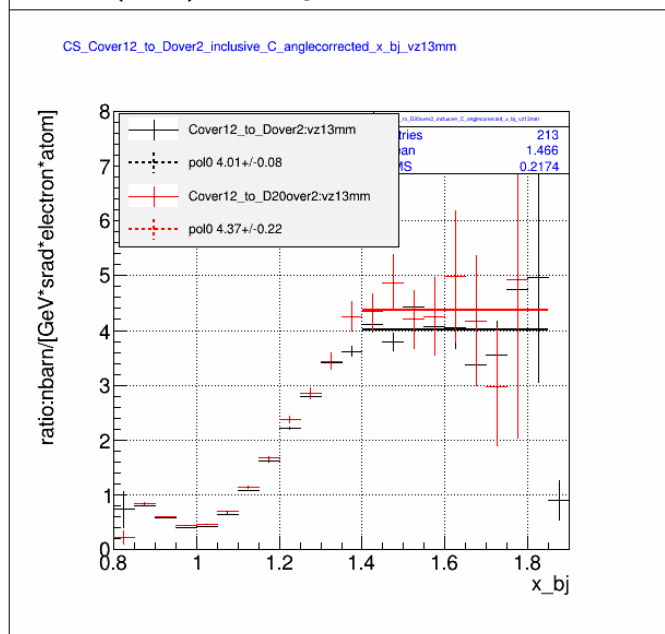
Renate of the a2 from inclusive. Inclusive data for x\_bj ratio.



R1\*:He/4 to D/2 (10cm-length)  
 give a2 pol0 3.59+/-0.07 (fit only)  
 pol0 3.72+/-0.05  
**compare to a2(He) at 3.60+/- 0.1\***  
**{N. Fomin et al, physi. Rev. Lett 108, 092502(2012)} with Q2 = 2.7-6.4**



R3\*:  
 C/12 to He/4  
**give flat region at pol0 1.11+/-0.01**



R4\*:  
 C/12 to D/2  
 give a2 pol0 4.01+/-0.08 : black: 10cm  
 pol0 4.37+/-0.22 : red: 20cm  
**compare to a2(C) at 4.75\***

