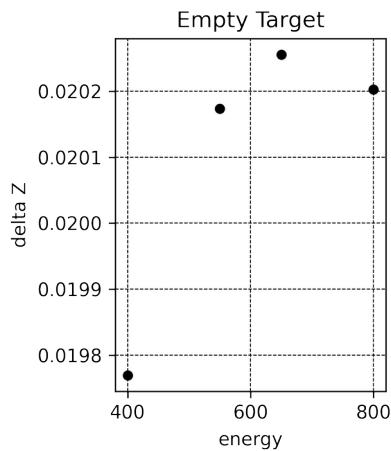
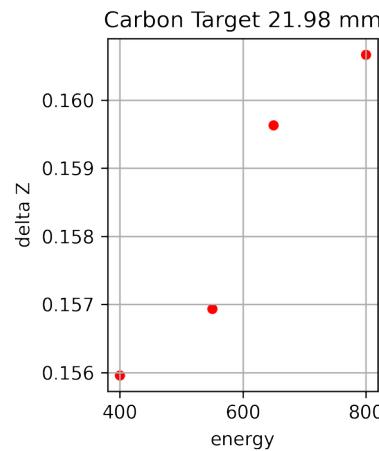


S444 numbers overview

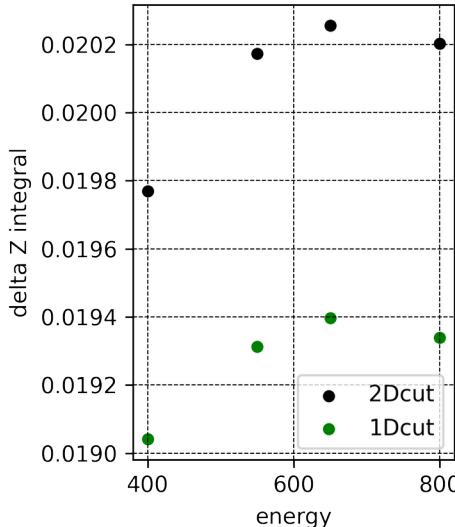
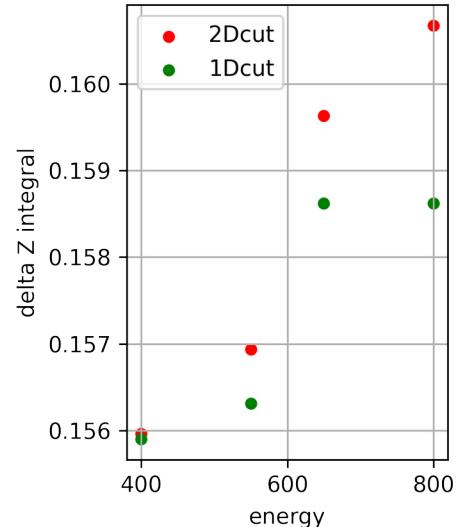
Target Type	RUN ID	Energy	incoming ions	$\Delta Z/\text{incoming ions}$	Isotope Correction	geom. Correction
c 2198	0183_0001	400	657424	0.15596	0.012997	1.00342
c 2198	0103_0001	550	437311	0.156934	0.015044	1.00191
c 2198	0130_0001	650	531690	0.159631	0.015043	1.00065
c 2198	0170_0001	800	480539	0.16067	0.012314	1.00069
empty	0187_0001	400	575624	0.0197698	0.00214	1.00065
empty	0096_0001	550	454455	0.0201736	0.003289	1.00022
empty	0124_0001	650	523267	0.0202554	0.003067	1.0001
empty	0173_0001	800	396093	0.0202023	0.002363	1.00012

	$\Delta Z/\text{incoming ions}$	Isotope Correction
Energy	Ratio target/empty	Ratio target/empty
400	7.88880008902467	6.07336448598154
550	7.77917674584606	4.57403466099107
650	7.88091076947382	4.90479295728719
800	7.95305485019033	5.21117223867964

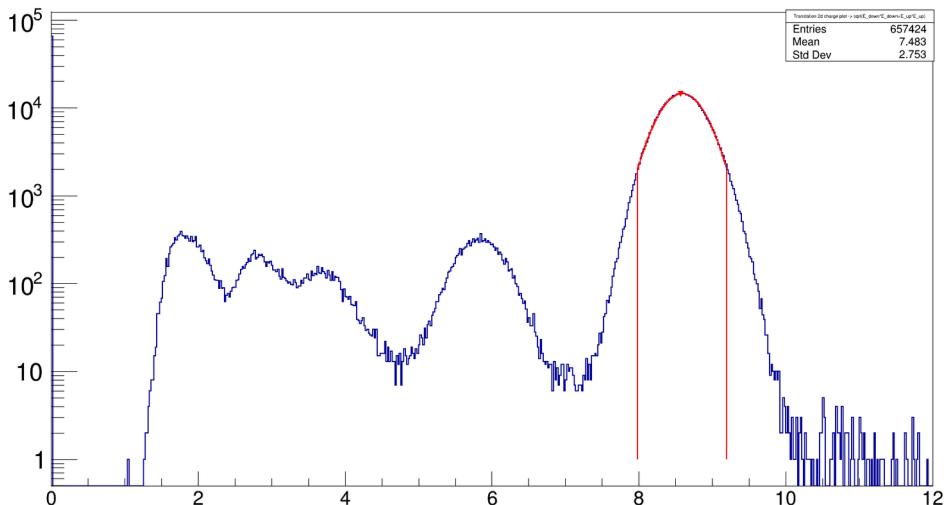
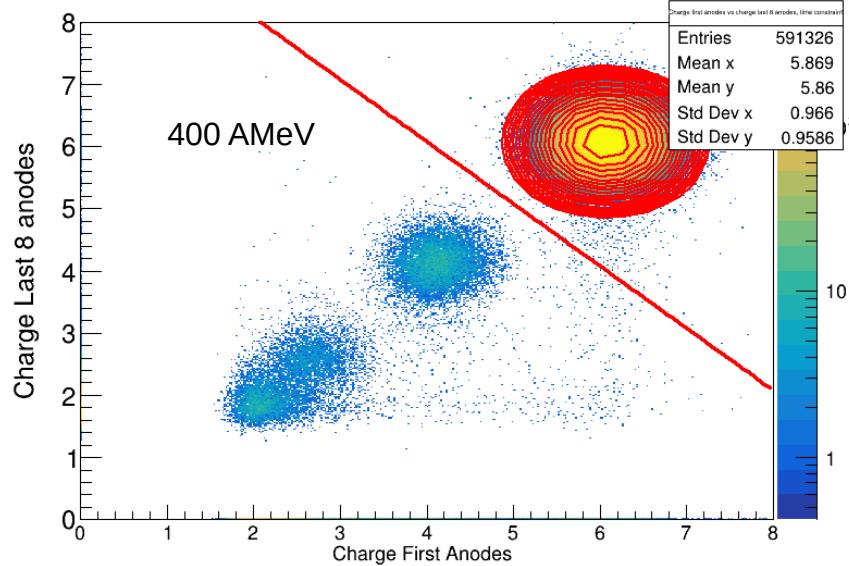
$\Delta Z / \text{incoming ions}$



By using 1D fit: $\sqrt{E_1^2 + E_2^2}$

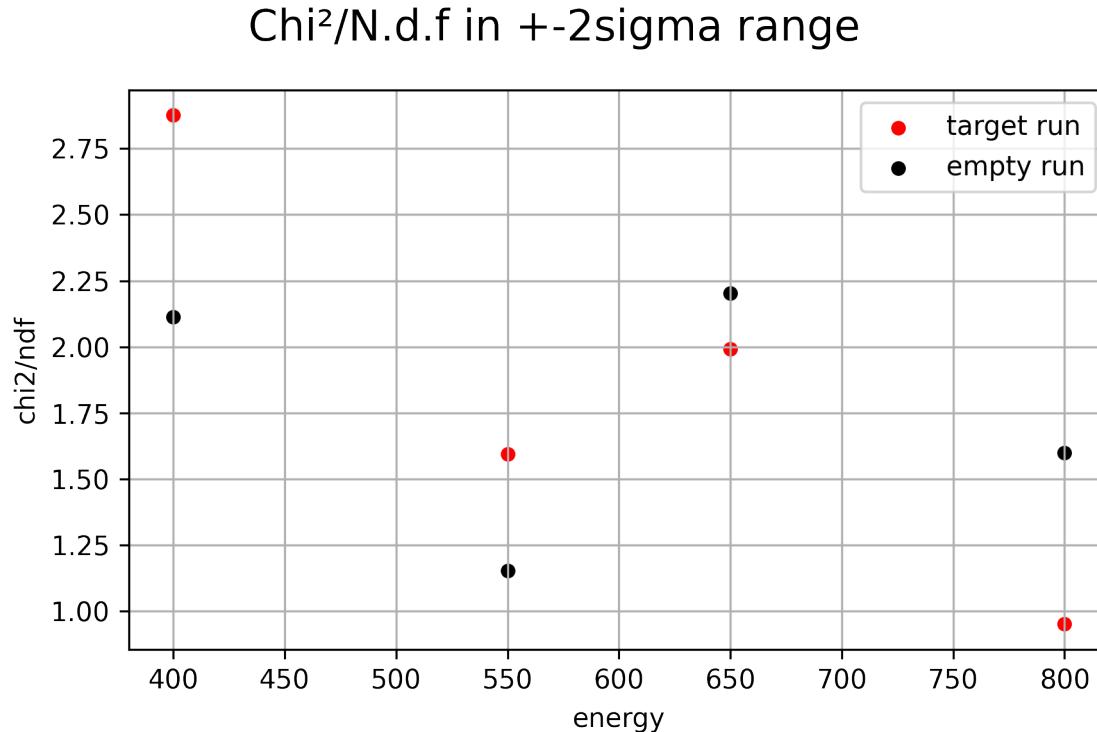


Charge first anodes vs charge last 8 anodes, time constraint

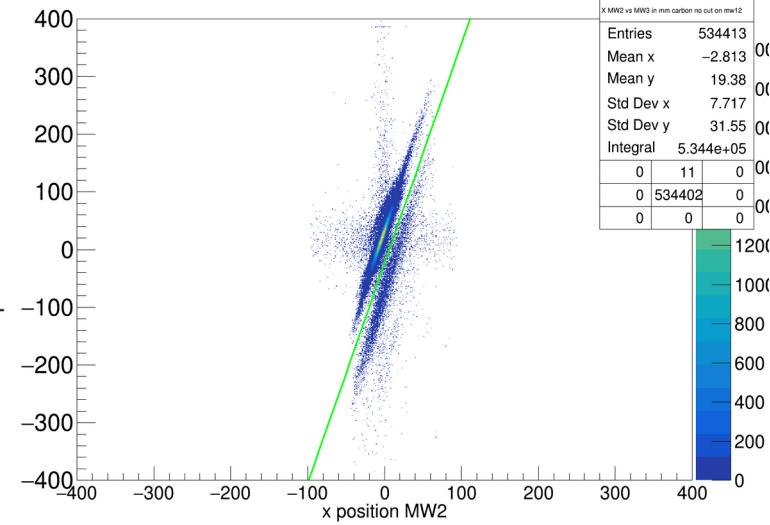


Algorithm for the 1D charge cut:

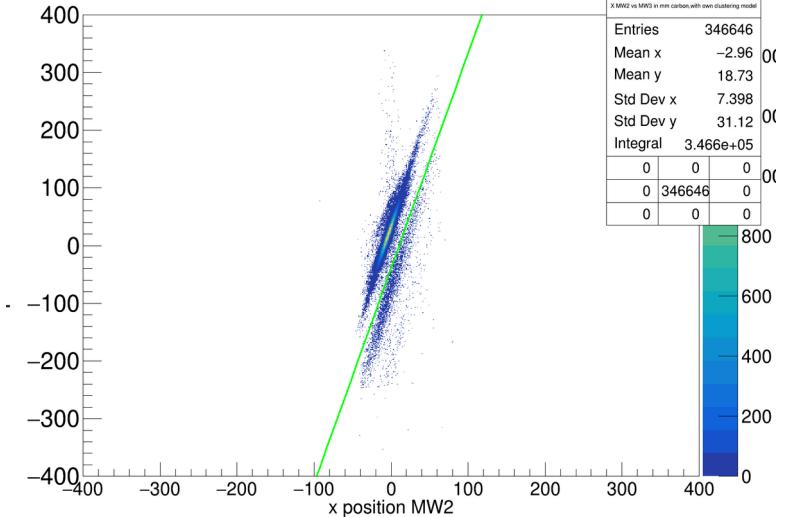
- 1) Peak finding: find peak of $Z = 6$
- 2) Fit around peak val ± 0.5 with gaussian
- 3) Fit again in range ± 2 sigma from previous gaussian fit
- 4) Get χ^2/ndf from final gaussian fit in the ± 2 sigma range
- 5) Integrate the gaussian fit function over full histogram



X MW2 vs MW3 in mm carbon no cut on mw12

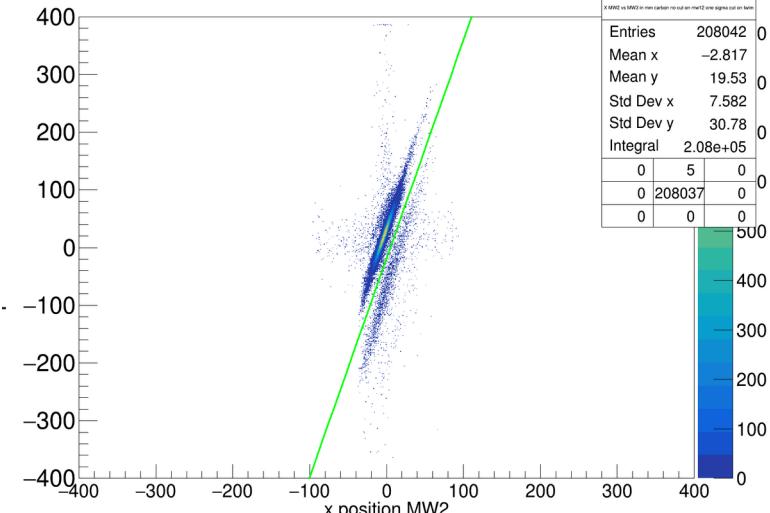


X MW2 vs MW3 in mm carbon,with own clustering model

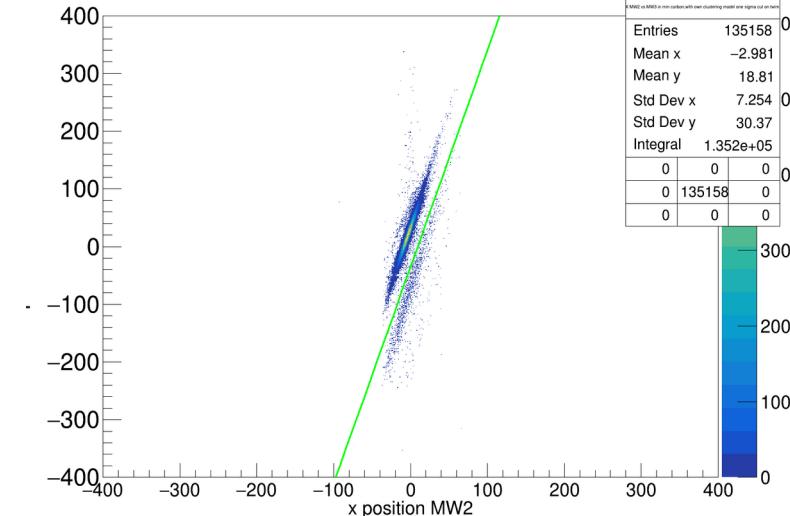


400 AMeV – Target Run

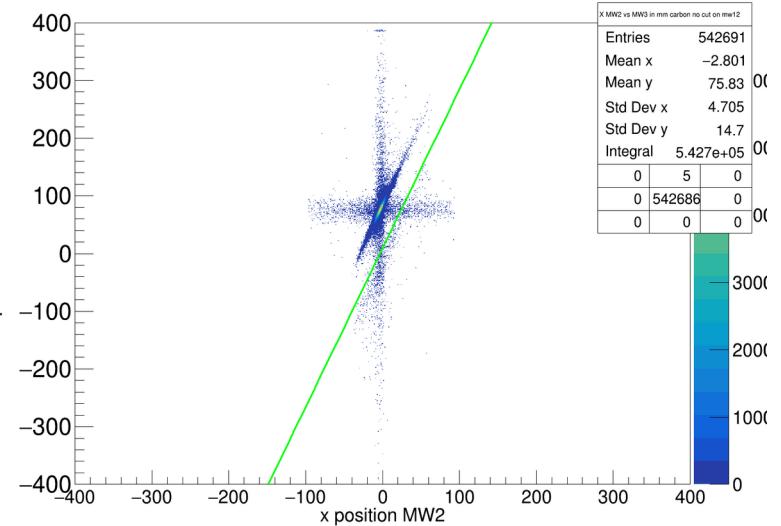
X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim



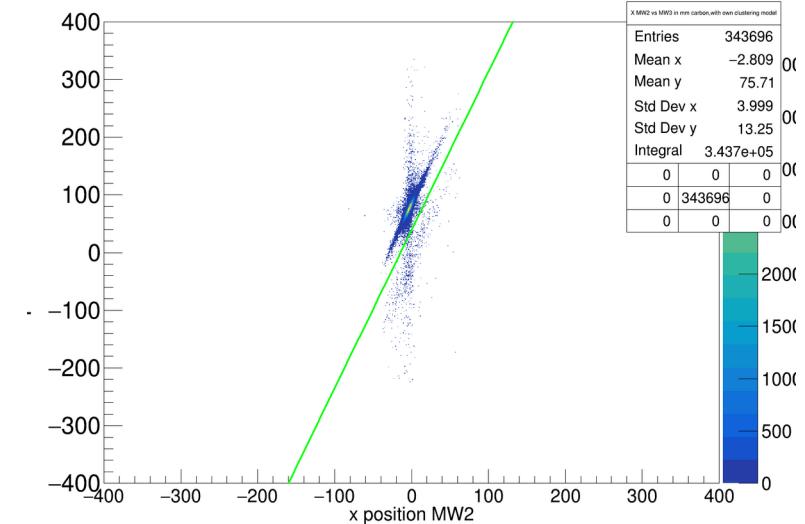
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



X MW2 vs MW3 in mm carbon no cut on mw12

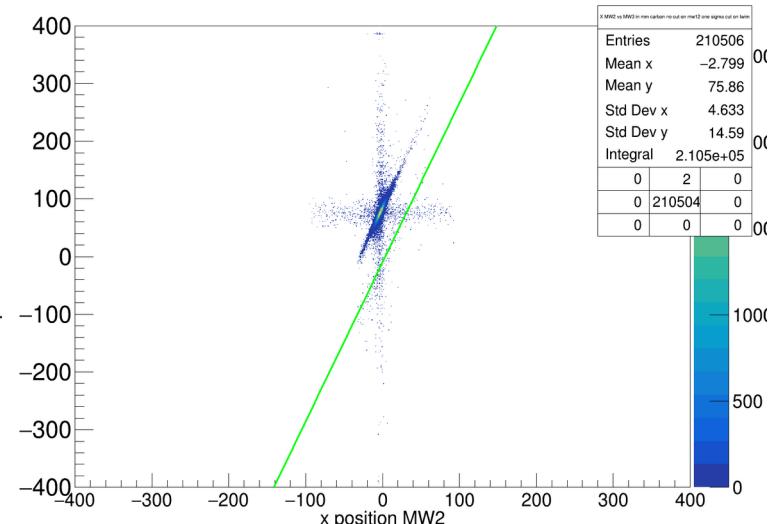


X MW2 vs MW3 in mm carbon,with own clustering model

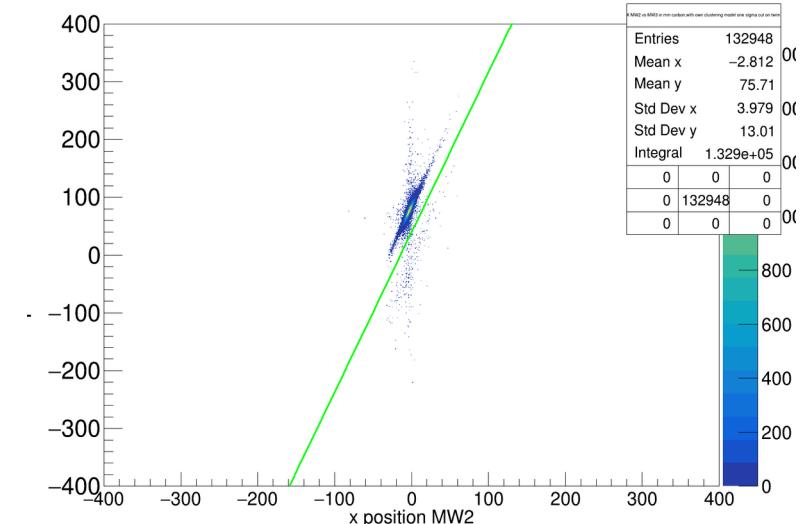


400 AMeV – Empty Run

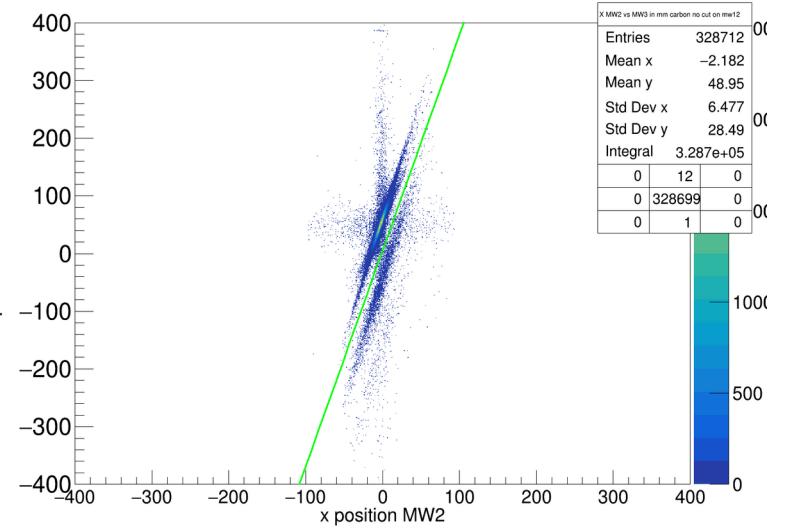
X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim



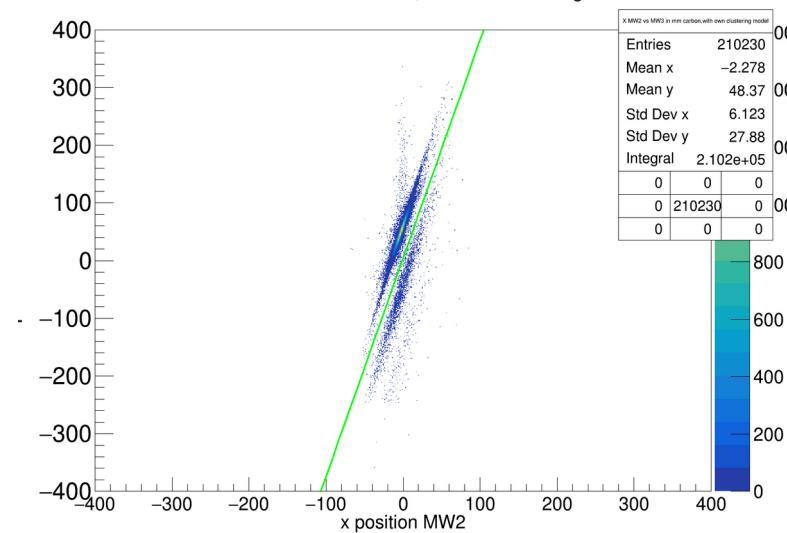
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



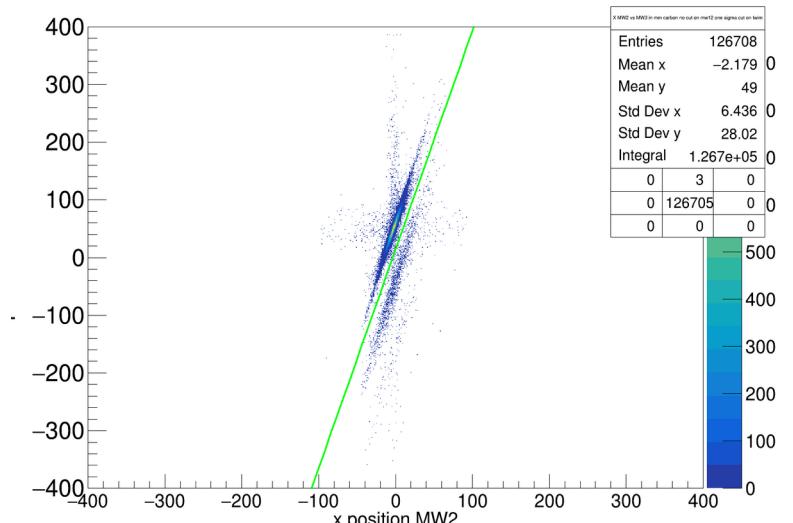
X MW2 vs MW3 in mm carbon no cut on mw12



X MW2 vs MW3 in mm carbon,with own clustering model

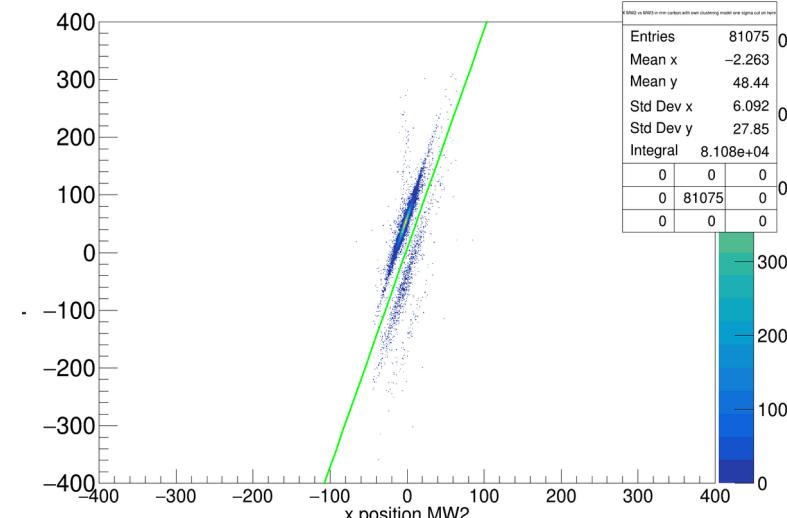


X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim

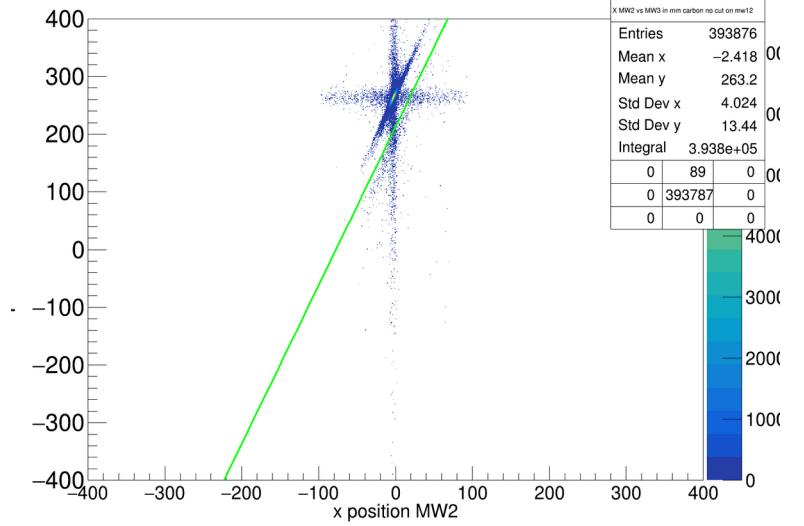


550 AMeV – Target Run

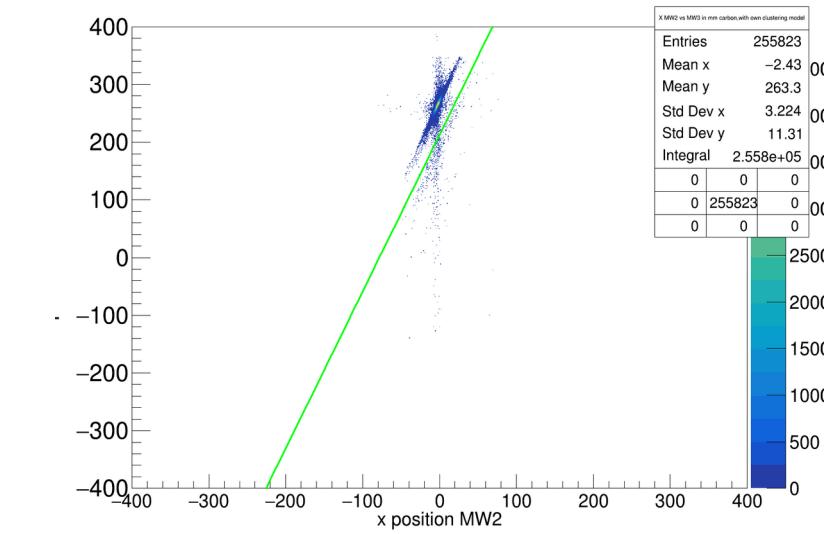
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



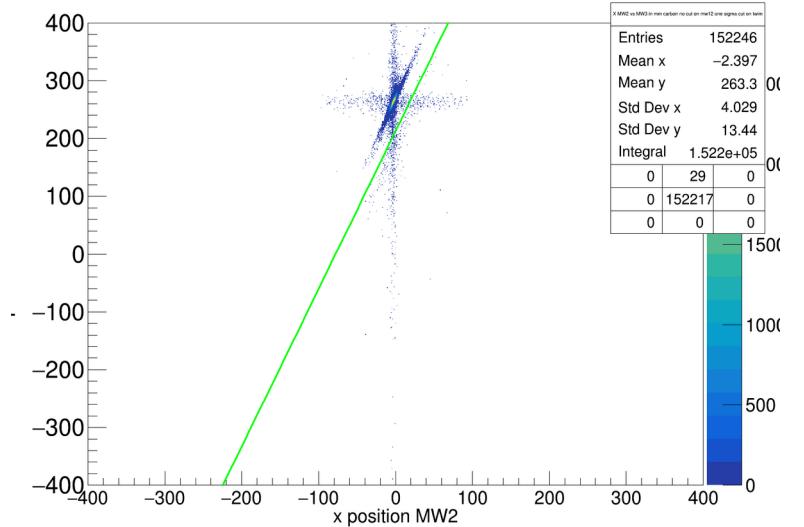
X MW2 vs MW3 in mm carbon no cut on mw12



X MW2 vs MW3 in mm carbon,with own clustering model

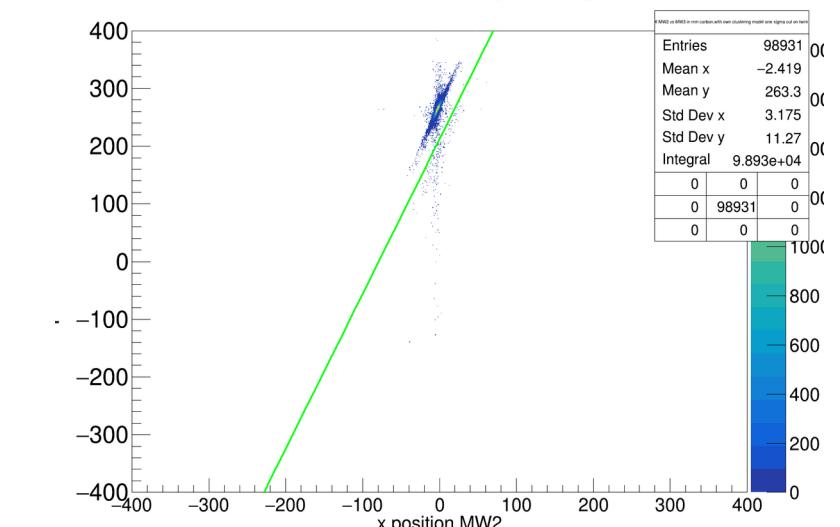


X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim

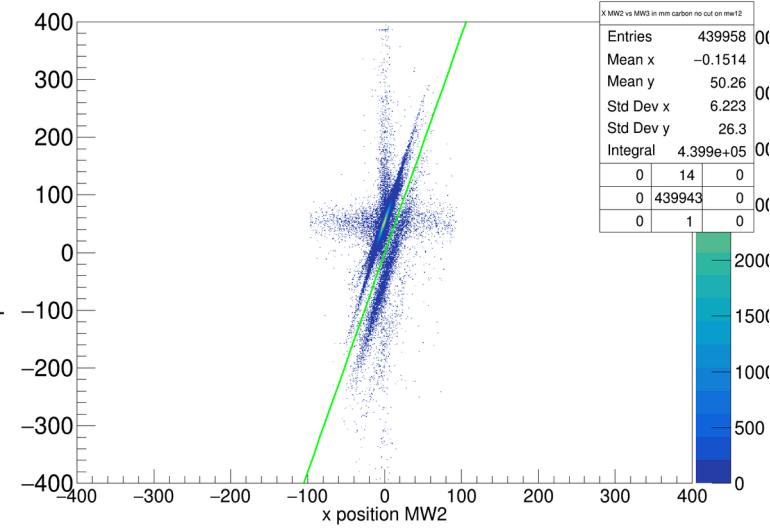


550 AMeV – Empty Run

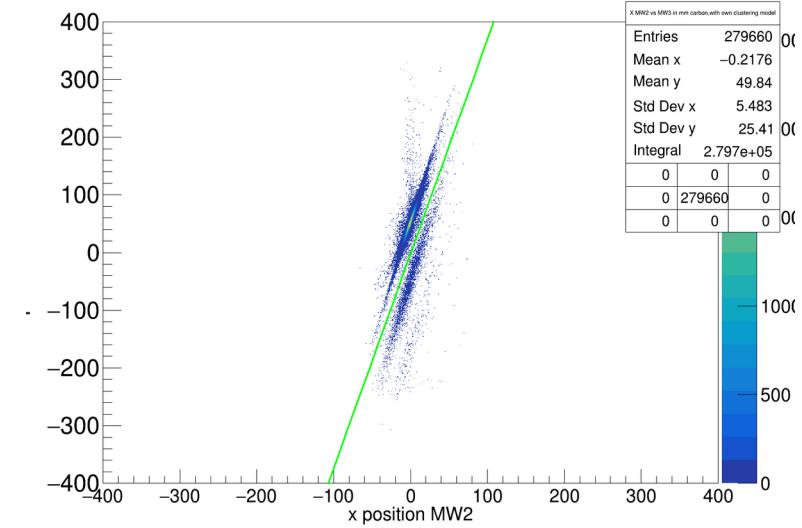
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



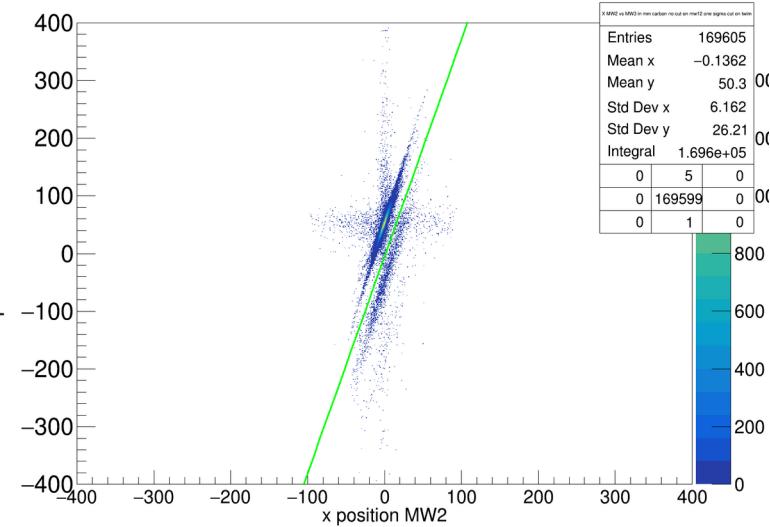
X MW2 vs MW3 in mm carbon no cut on mw12



X MW2 vs MW3 in mm carbon,with own clustering model

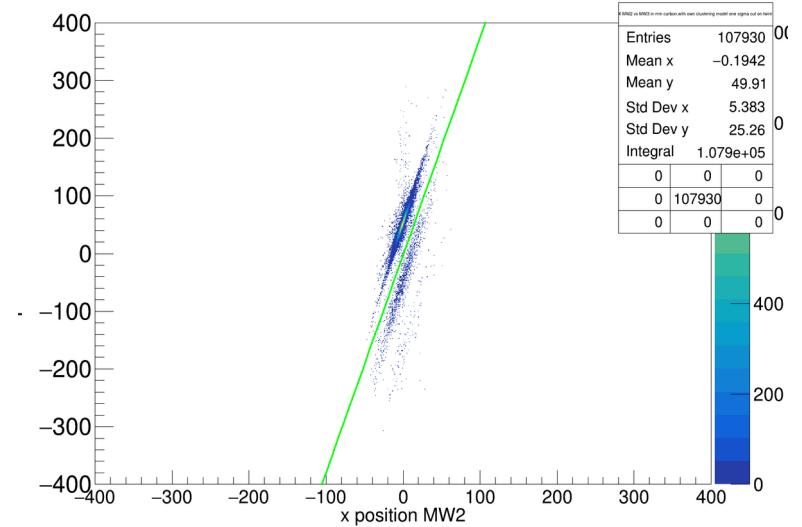


X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim

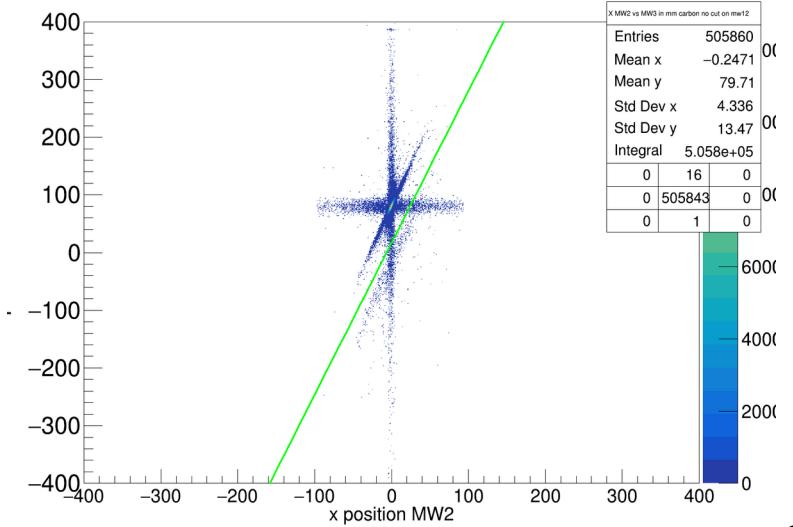


650 AMeV – Target Run

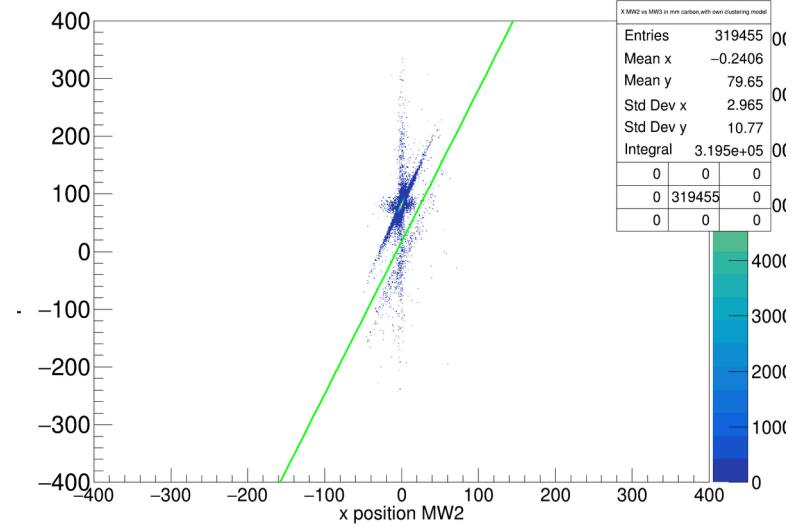
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



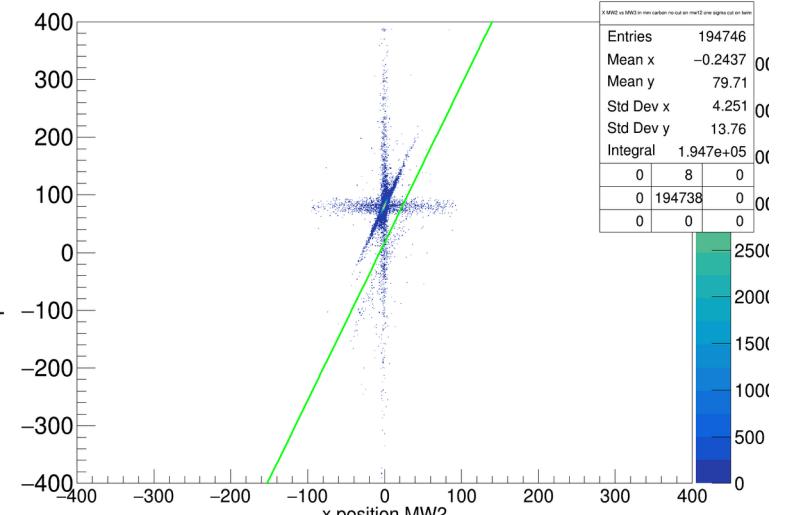
X MW2 vs MW3 in mm carbon no cut on mw12



X MW2 vs MW3 in mm carbon,with own clustering model

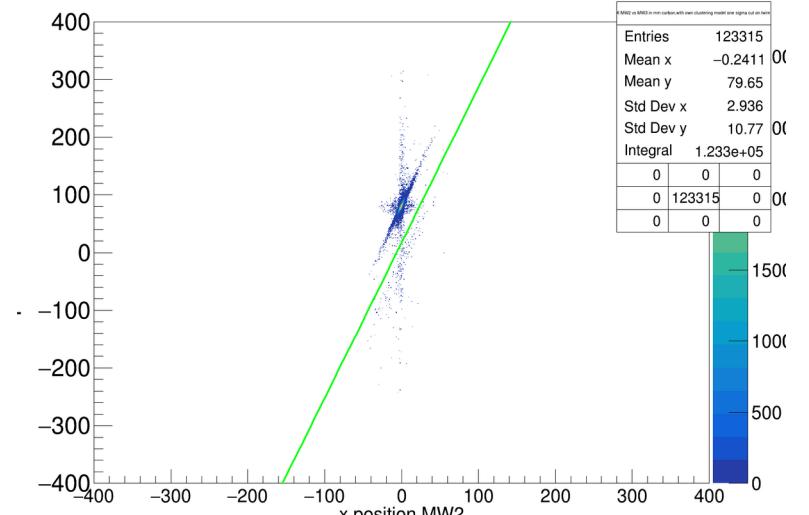


X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim

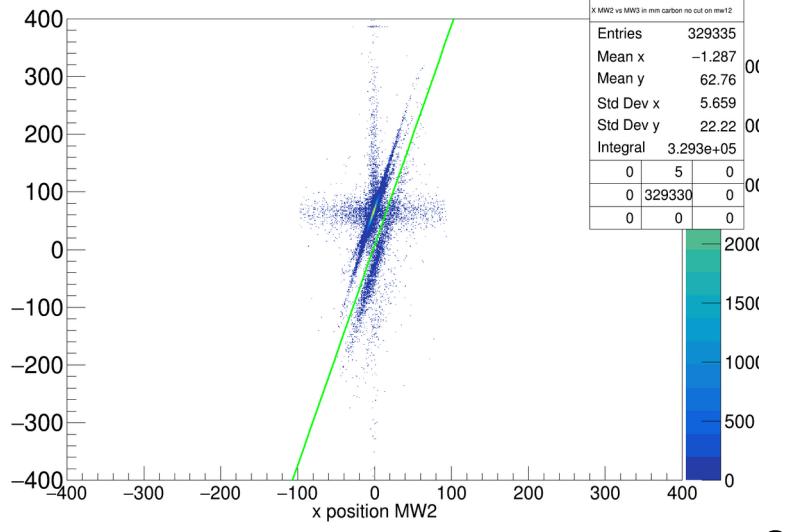


650 AMeV – Empty Run

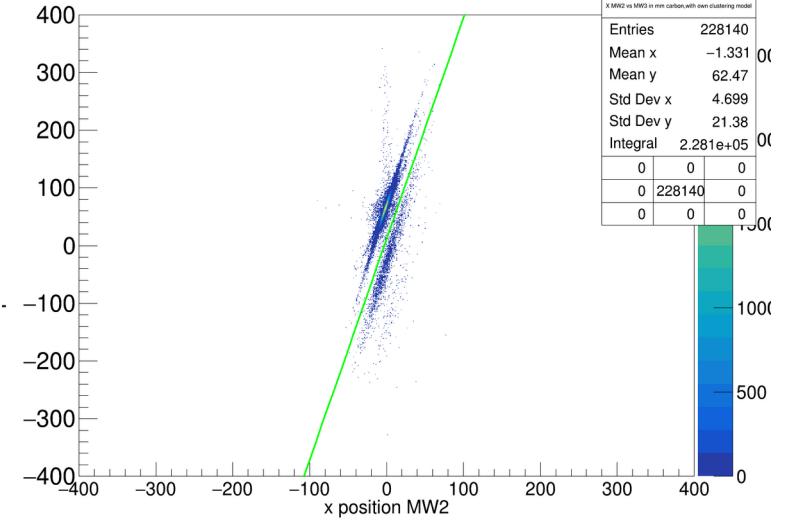
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



X MW2 vs MW3 in mm carbon no cut on mw12

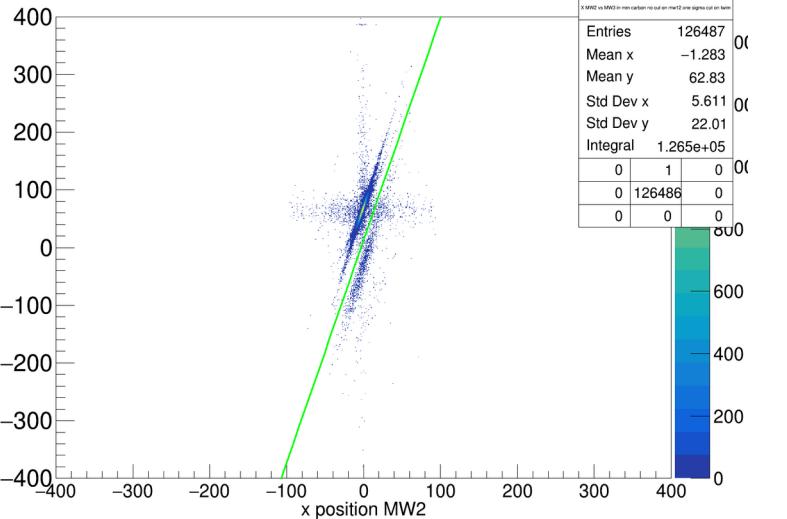


X MW2 vs MW3 in mm carbon,with own clustering model

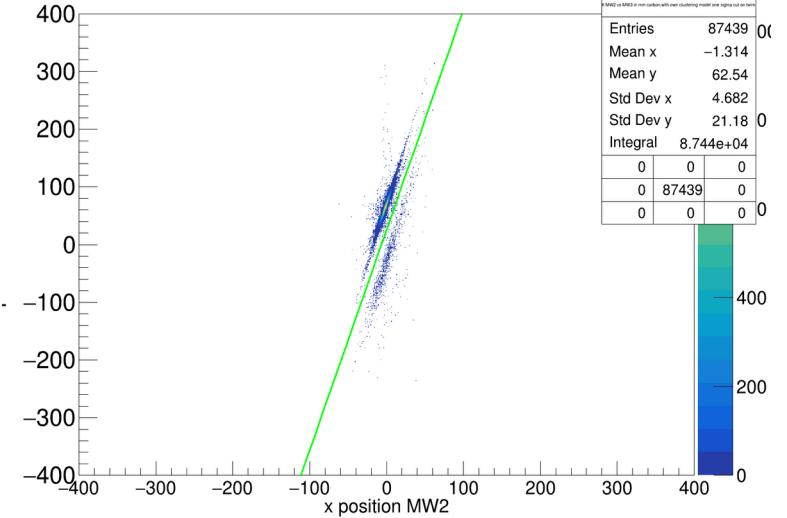


800 AMeV – Target Run

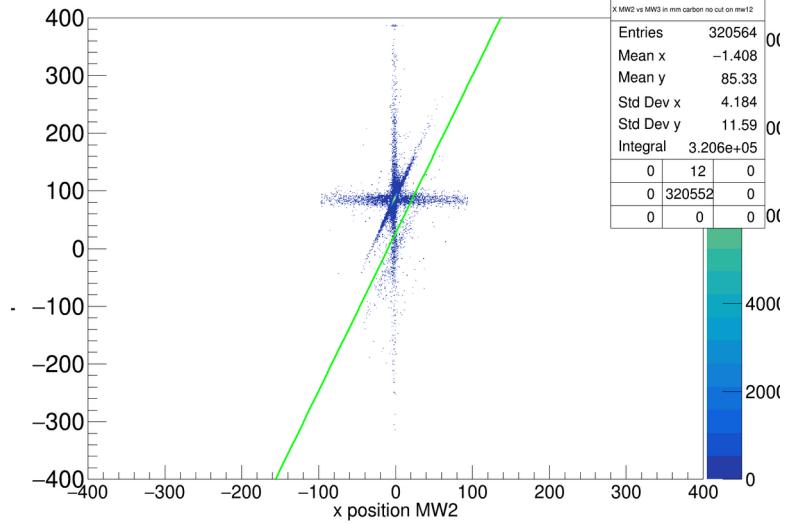
X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim



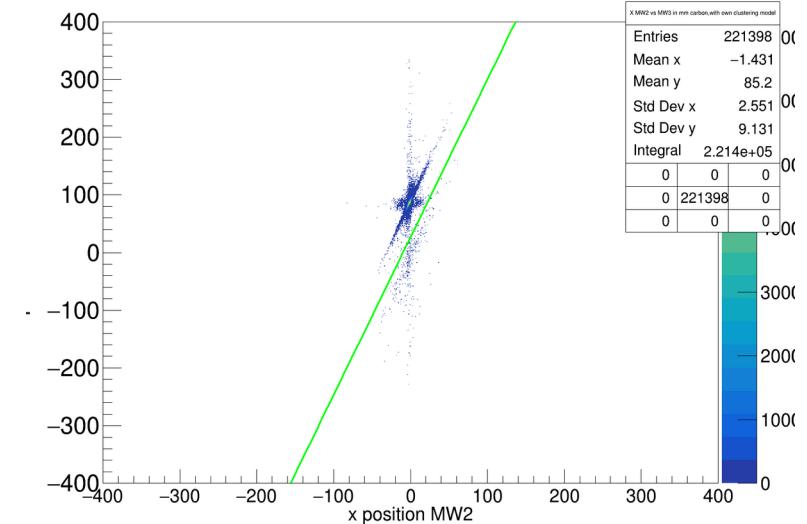
X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim



X MW2 vs MW3 in mm carbon no cut on mw12

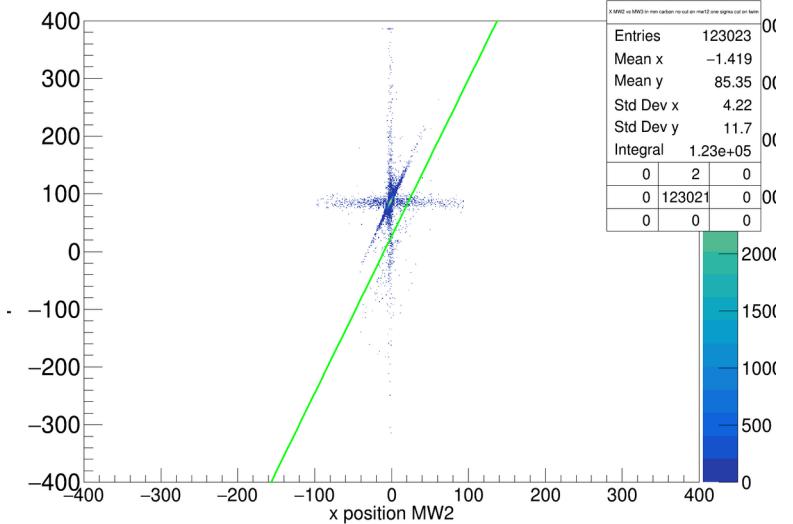


X MW2 vs MW3 in mm carbon,with own clustering model

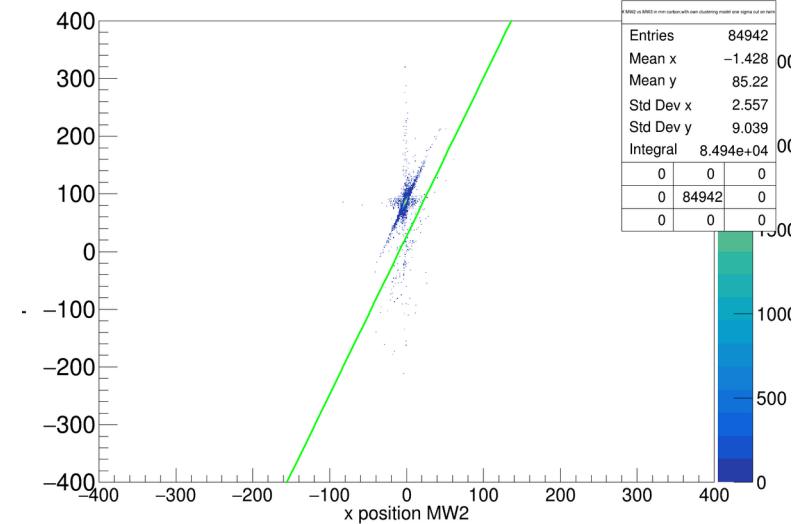


800 AMeV – Empty Run

X MW2 vs MW3 in mm carbon no cut on mw12 one sigma cut on twim

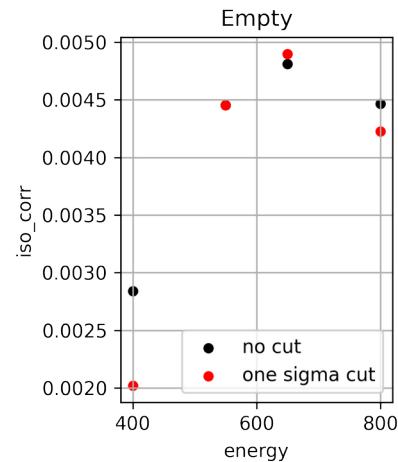
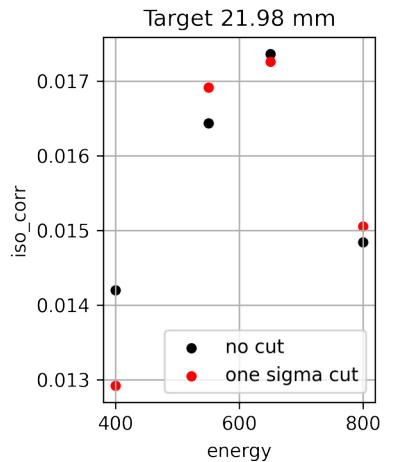


X MW2 vs MW3 in mm carbon,with own clustering model one sigma cut on twim

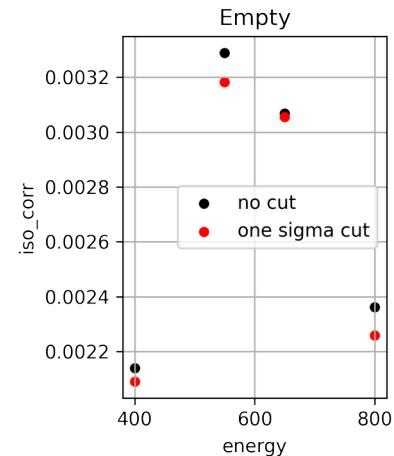
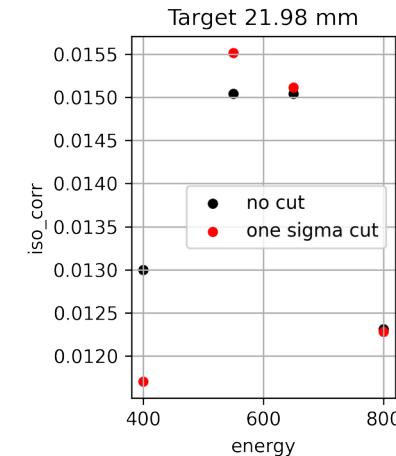


Isotopic corrections – Methods -Results

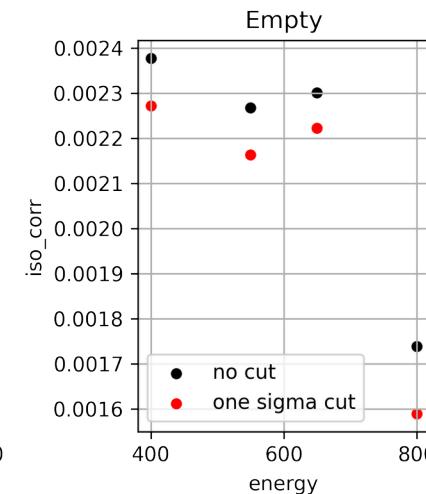
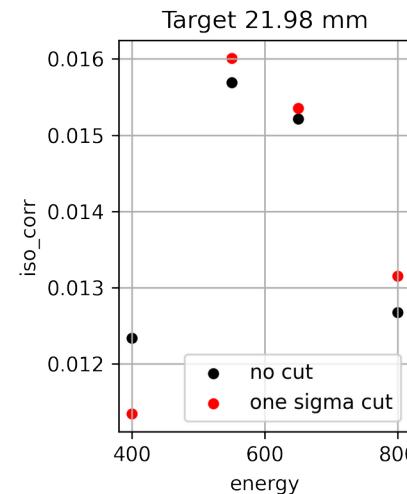
Isotopic Correction - no cuts at all:



Isotopic Correction - with cut on the MW1 vs MW2 correlat



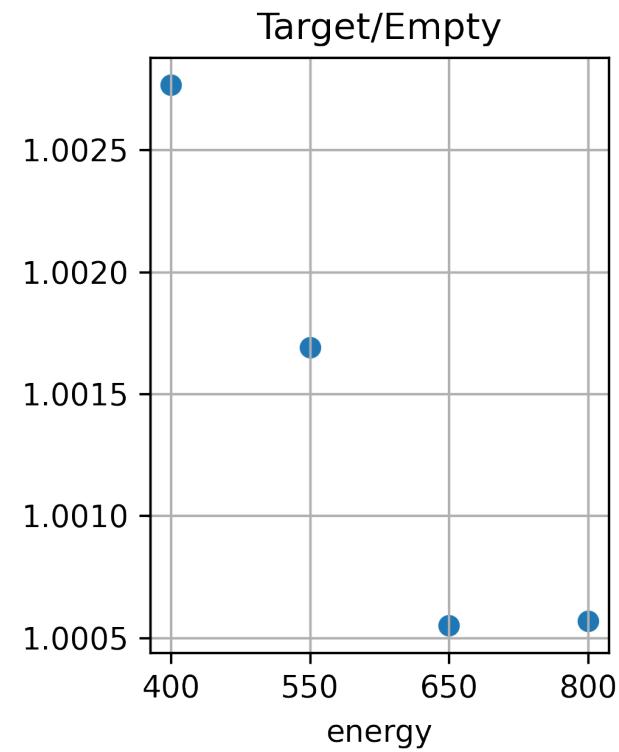
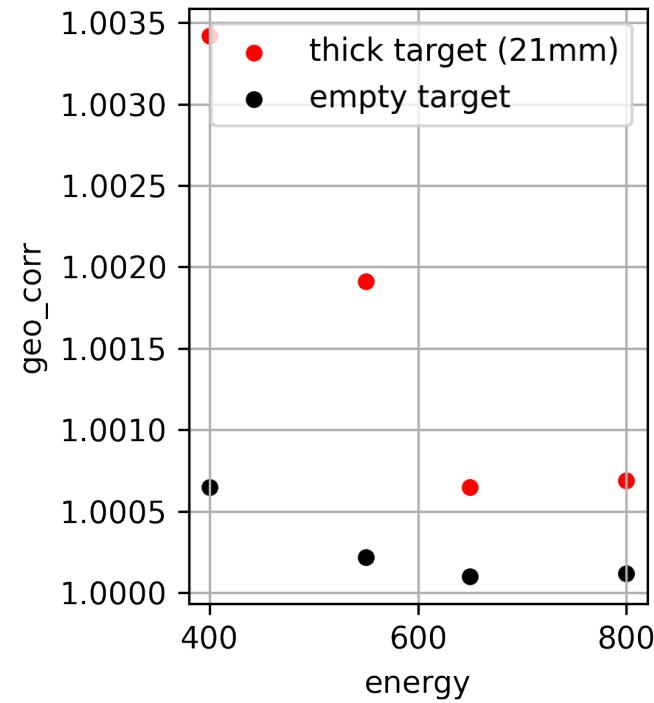
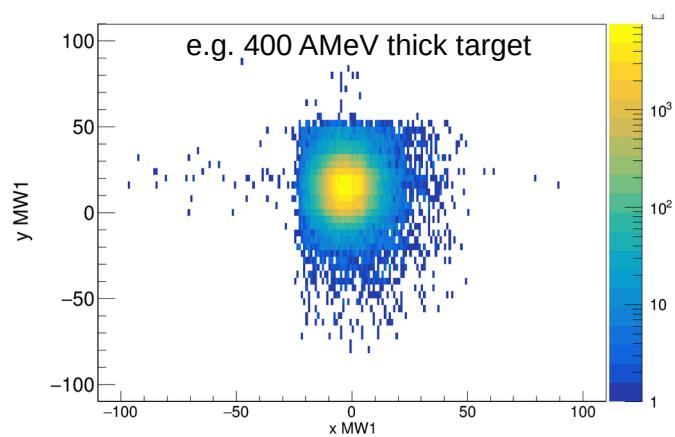
Isotopic Correction - with own clustering:



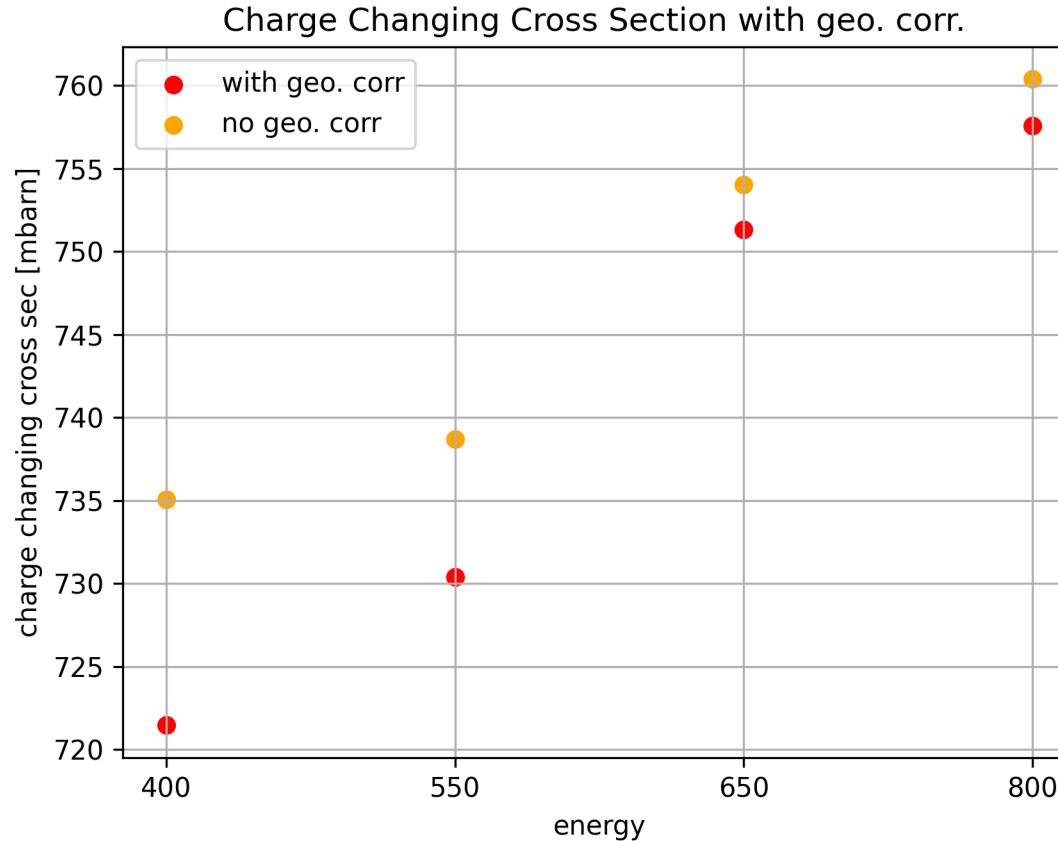
Isotopic corrections – Numbers

Iso corr no cut , target	one sigma	Iso corr no cut , empty	one sigma	Ratio	Ratio one sigma
0.0142025	0.0129205	0.00283955	0.00201894	5.0016728	6.39964535845543
0.0164369	0.0169129	0.00445572	0.00445332	3.68894365	3.79781825694089
0.0173653	0.0172636	0.00481358	0.00489869	3.607564432	3.52412583772396
0.0148451	0.0150529	0.00446713	0.00422685	3.323185132	3.56125720098892
Iso corr mw12 cut , target	one sigma	Iso corr mw12 cut , empty	one sigma	Ratio	Ratio one sigma
0.0129969	0.0117048	0.00214039	0.00209063	6.072211139	5.59869513017607
0.0150435	0.0155149	0.00328888	0.00318259	4.574049524	4.87492891010152
0.0150429	0.0151116	0.00306742	0.00305548	4.904088778	4.94717687564638
0.0123144	0.0122829	0.00236267	0.00225849	5.212069396	5.43854522269304
Iso corr own cluster, target	one sigma	Iso corr own cluster , empty	one sigma	Ratio	Ratio one sigma
0.0129969	0.0113423	0.00214039	0.00227156	6.072211139	4.99317649544806
0.0150435	0.0160099	0.00328888	0.00216312	4.574049524	7.40129997411147
0.0150429	0.0153525	0.00306742	0.00222195	4.904088778	6.90947141024776
0.0123144	0.0131512	0.00236267	0.00158932	5.212069396	8.27523720836584

Geometric correction:



Geometric Correction has to be already applied to charge changing cross section!



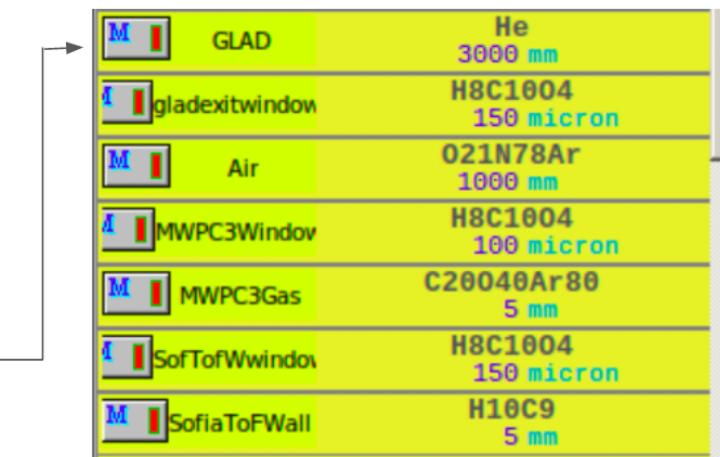
This looks good, shape and curvature what we would expect

Material Budget in beamline

↓
beam

M	FRS exit window	Ti 200 micron
M	MWPC0Wind	H8C1004 100 micron
M	MWPC0Gas	C20040Ar80 10 mm
M	R3BMusicWin	H8C1004 100 micron
M	R3BMusicGas	C151H300Ar490 510 mm
M	StartWindow	H8C1004 300 micron
M	SofiaSci	H10C9 1 mm
M	ROLUwindow	H8C8 400 micron
M	TCwindow	H8C1004 23 micron
M	CaveCtarg	
M	HeGas	He 1230 mm
M	TC exit window	H8C1004 23 micron
M	Air	O21N78Ar 1000 mm
M	MWPC12 window	H8C1004 200 micron
M	MWPC12 gas	Ar80C20040 10 mm
I	TwinMusicWind	H8C1004 100 micron
M	TwinMusicGas	C151H300Ar490 550 mm
M	glad window	H8C1004 23 micron
M	GLAD	He 3000 mm

List of the setup materials as set in LISE calculations.



M	GLAD	He 3000 mm
I	gladexitwindow	H8C1004 150 micron
M	Air	O21N78Ar 1000 mm
I	MWPC3Window	H8C1004 100 micron
M	MWPC3Gas	C20040Ar80 5 mm
I	SofTofWwindow	H8C1004 150 micron
M	SofiaToFWall	H10C9 5 mm

These are the numbers from the subsequent experiment S467.
Should be same as for the S444 experiment