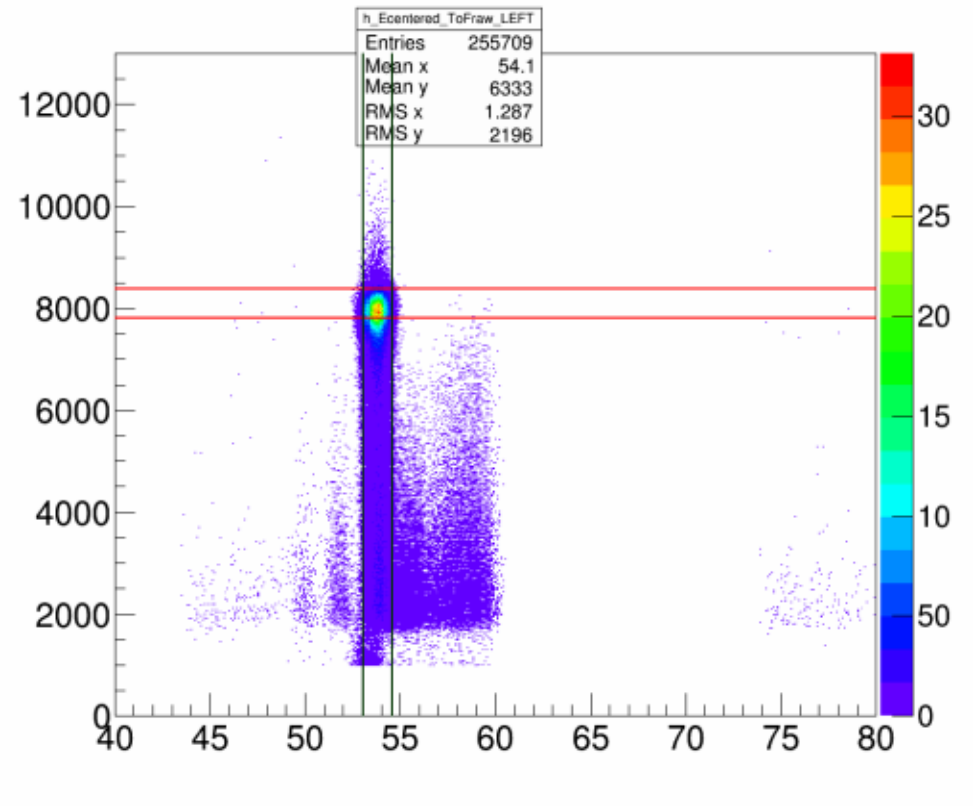
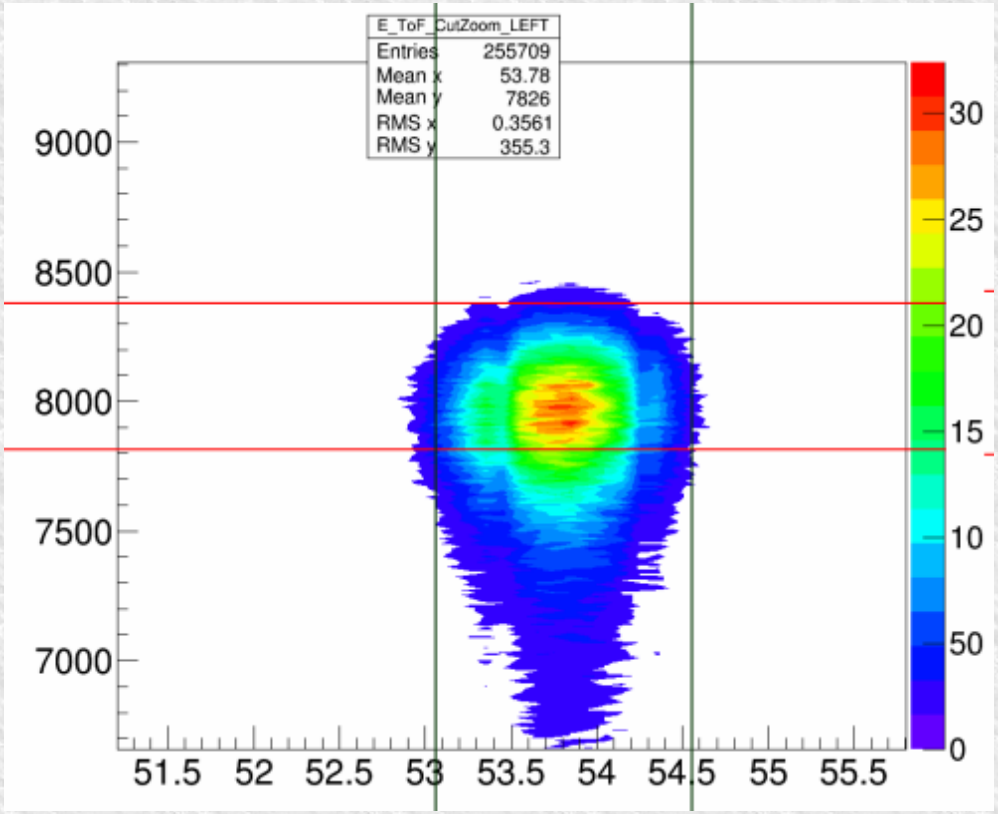
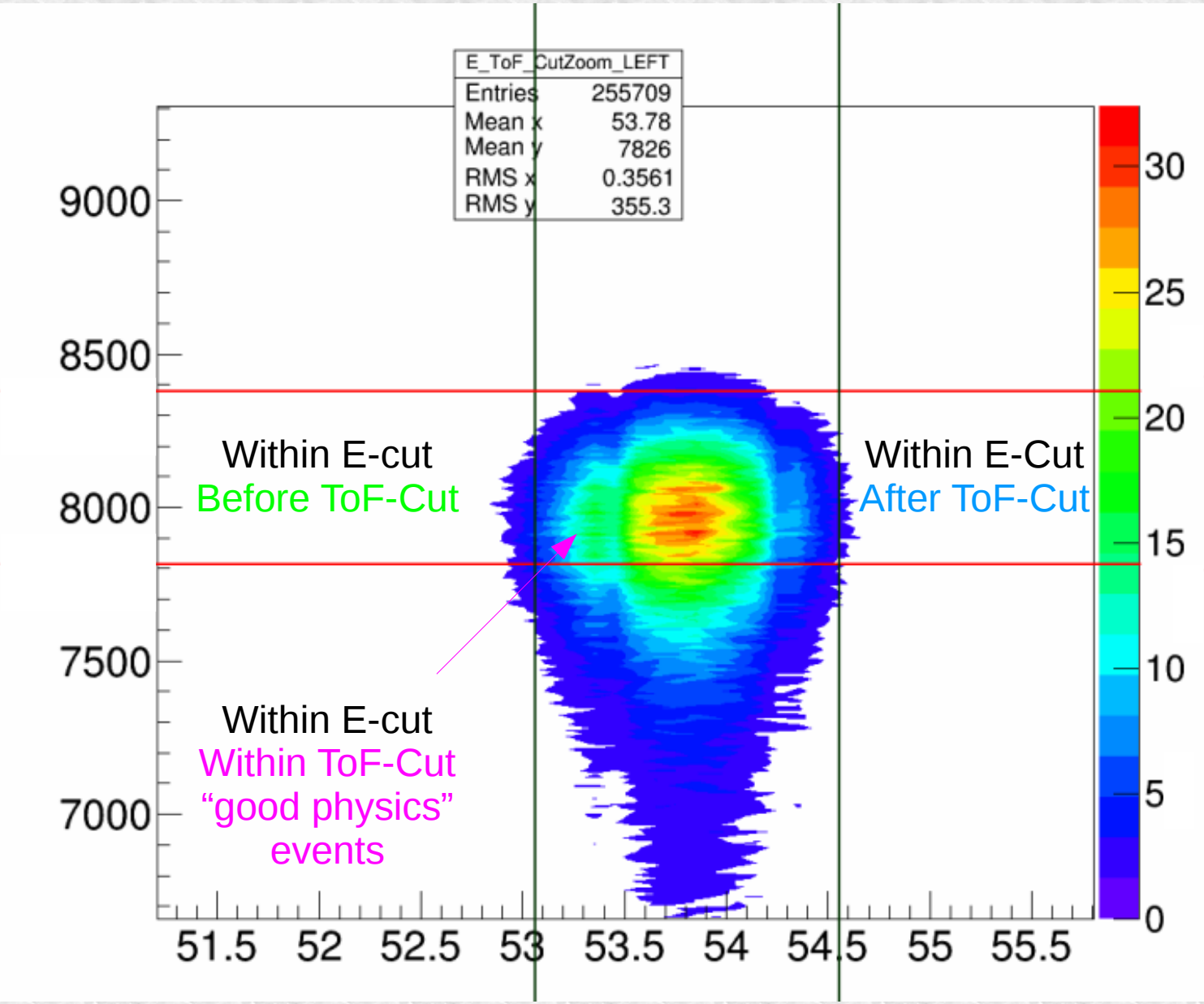
Mott Dilution Analysis

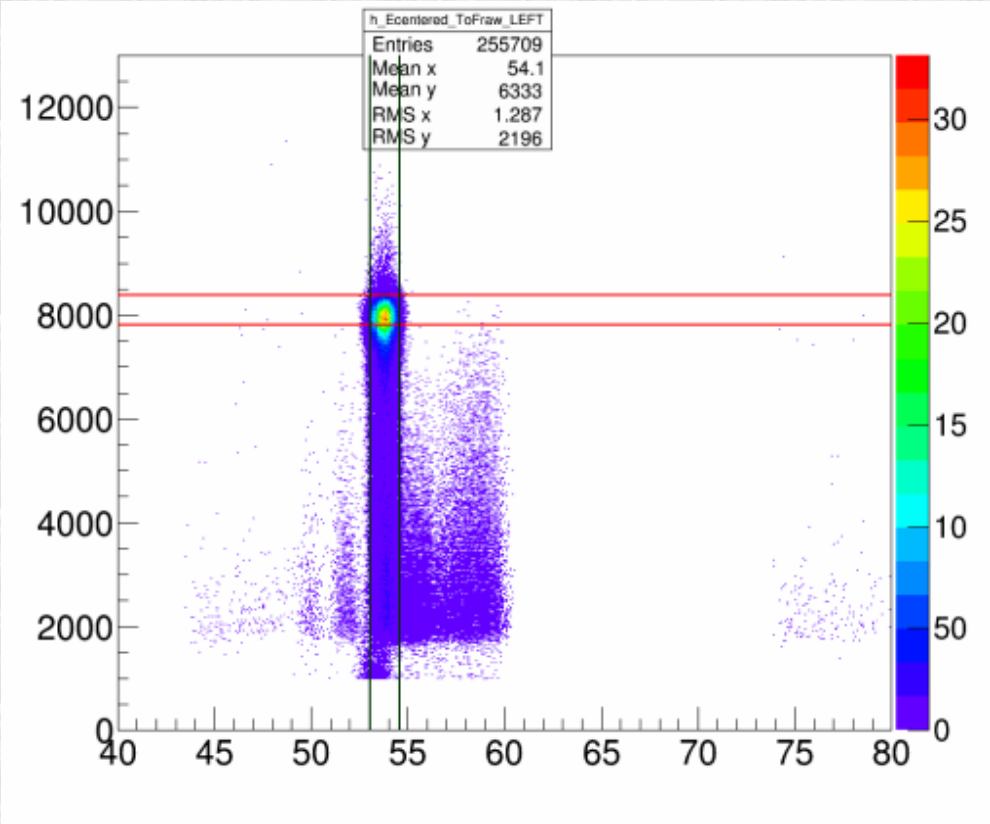


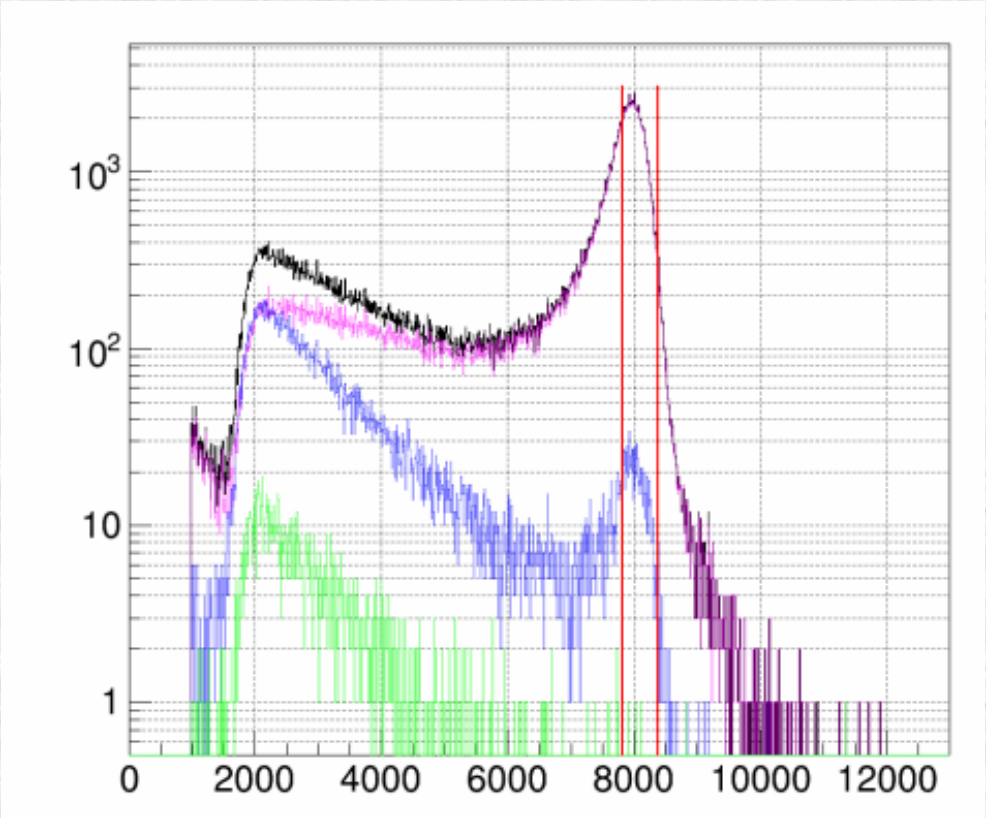


Run 8545, 350 nm Foil, Left Detector
Energy vs Time-of-Flight with Cuts



Run 8545, 350 nm Foil, Left Detector
Energy vs Time-of-Flight with Cuts



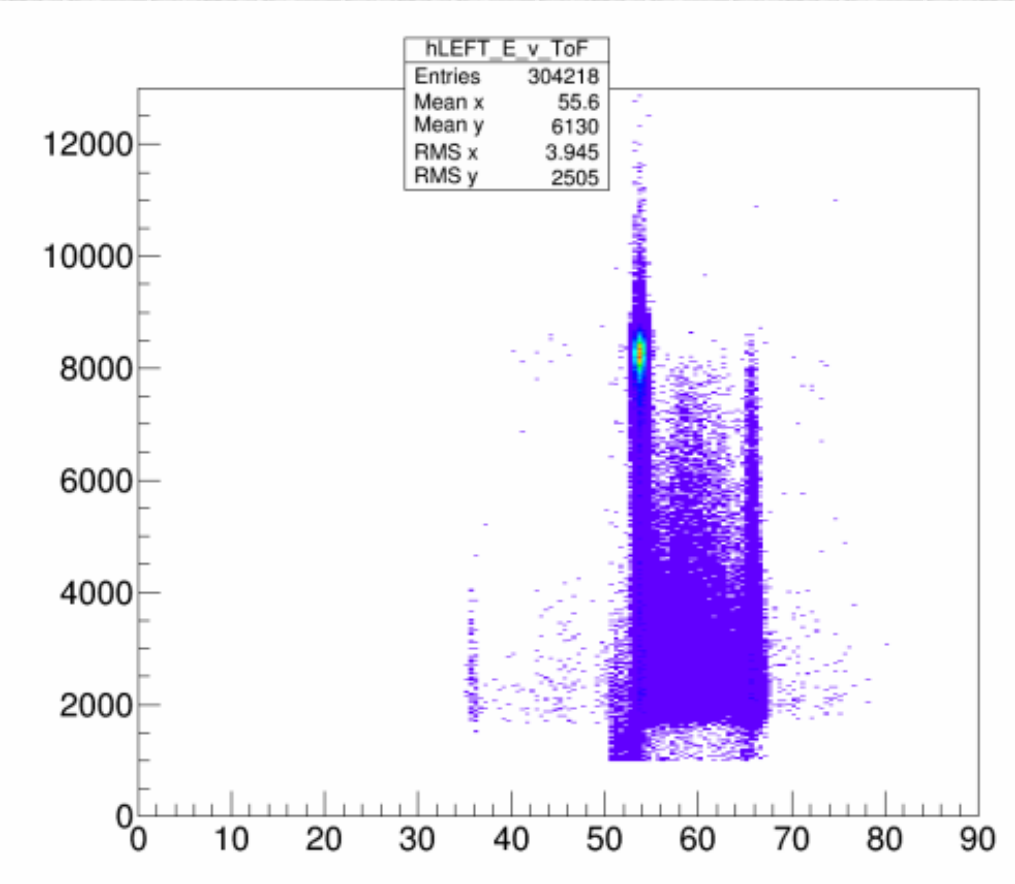


Run 8545, 350 nm Foil, Left Detector
Left: Energy vs Time-of-Flight with Cuts
Right: Energy Spectra – Black = All Events,
Pink = Events **within** ToF-Cut
Green = Events **before** ToF-Cut
Blue = Events **after** ToF-Cut

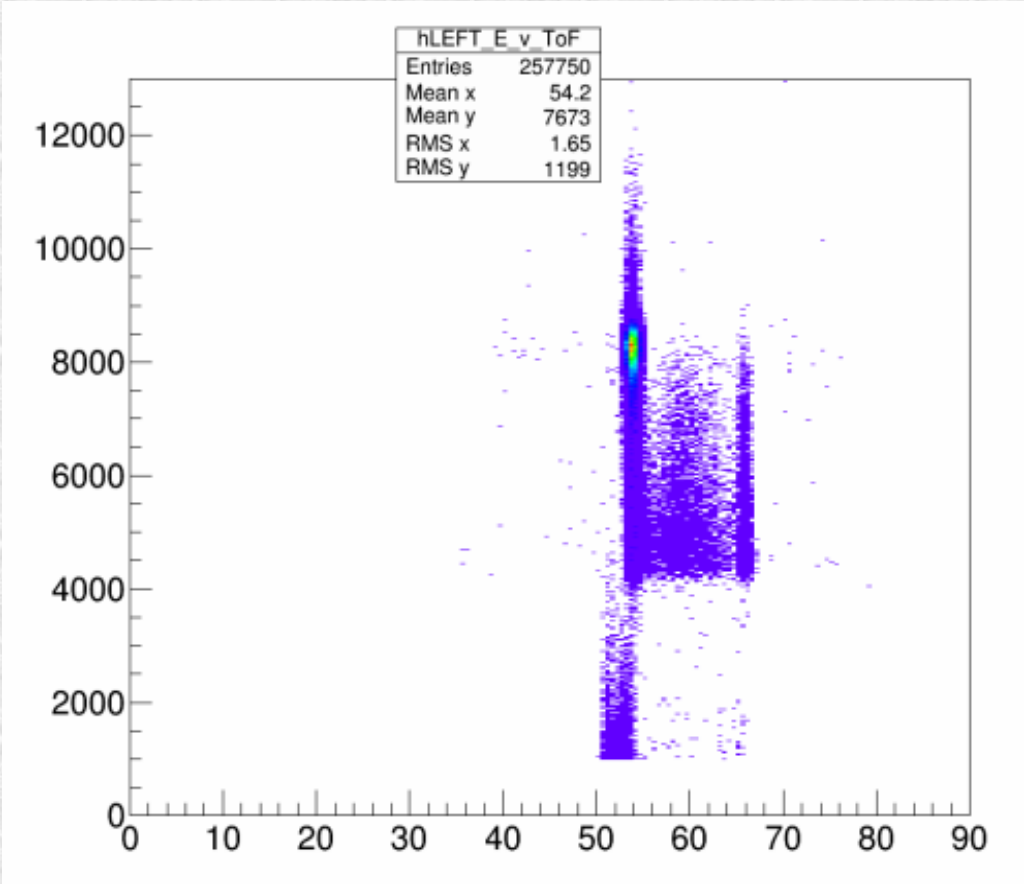
Run I: Foil's Average % of Events Before and After ToF-Cut

TL # PMT	Lebow T (nm)	ToF-Cut [-2 : +2] sigma			ToF-Cut [-3 : +3] sigma		
LEFT Detector		Average % of ***All*** Events Within ToF-Cut and E-Cut	Average % of Events Within E-Cut, **Before** ToF-Cut	Average % of Events Within E-Cut, **After** ToF-Cut	Average % of ***All*** Events Within ToF-Cut and E-Cut	Average % of Events Within E-Cut, **Before** ToF-Cut	Average % of Events Within E-Cut, **After** ToF-Cut
15 Low	1000	33.151	0.006	1.533	33.461	0.006	0.086
3 Low	870	33.565	0.006	1.707	34.006	0.006	0.075
4 Low	750	32.695	0.006	1.489	33.163	0.006	0.067
2 Low	625	29.885	0.005	1.471	30.306	0.005	0.076
5 Low	500	27.173	0.005	1.353	27.571	0.005	0.075
14 Low	350	24.201	0.009	1.354	24.500	0.009	0.083
8 High	350	43.754	0.021	1.810	44.498	0.020	0.118
1 High	225	41.232	0.023	1.804	41.922	0.023	0.142
12 High	50	30.559	0.025	1.971	31.055	0.024	0.371
13 High	50	31.364	0.025	1.957	31.887	0.024	0.331
15-stab. Low	1000	32.920	0.006	1.516	33.334	0.006	0.074
15-stab. High	1000	48.069	0.007	1.943	48.970	0.007	0.087

High vs Low PMT Threshold



Left Detector
Run 8022, 1000 nm Foil
Low PMT Threshold
32.92 % of all events within
E and ToF cuts

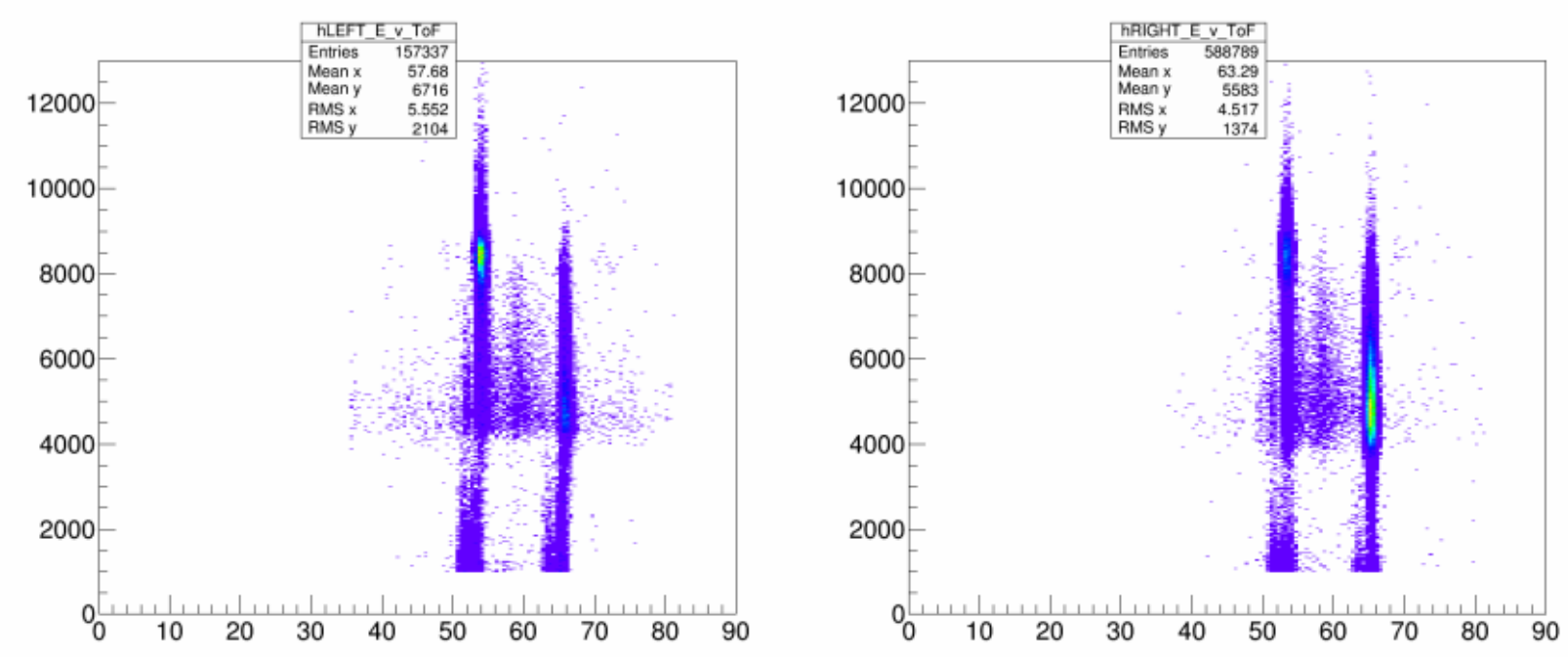


Left Detector
Run 8058, 1000 nm Foil
High PMT Threshold
48.069 % of all events within
E and ToF Cuts

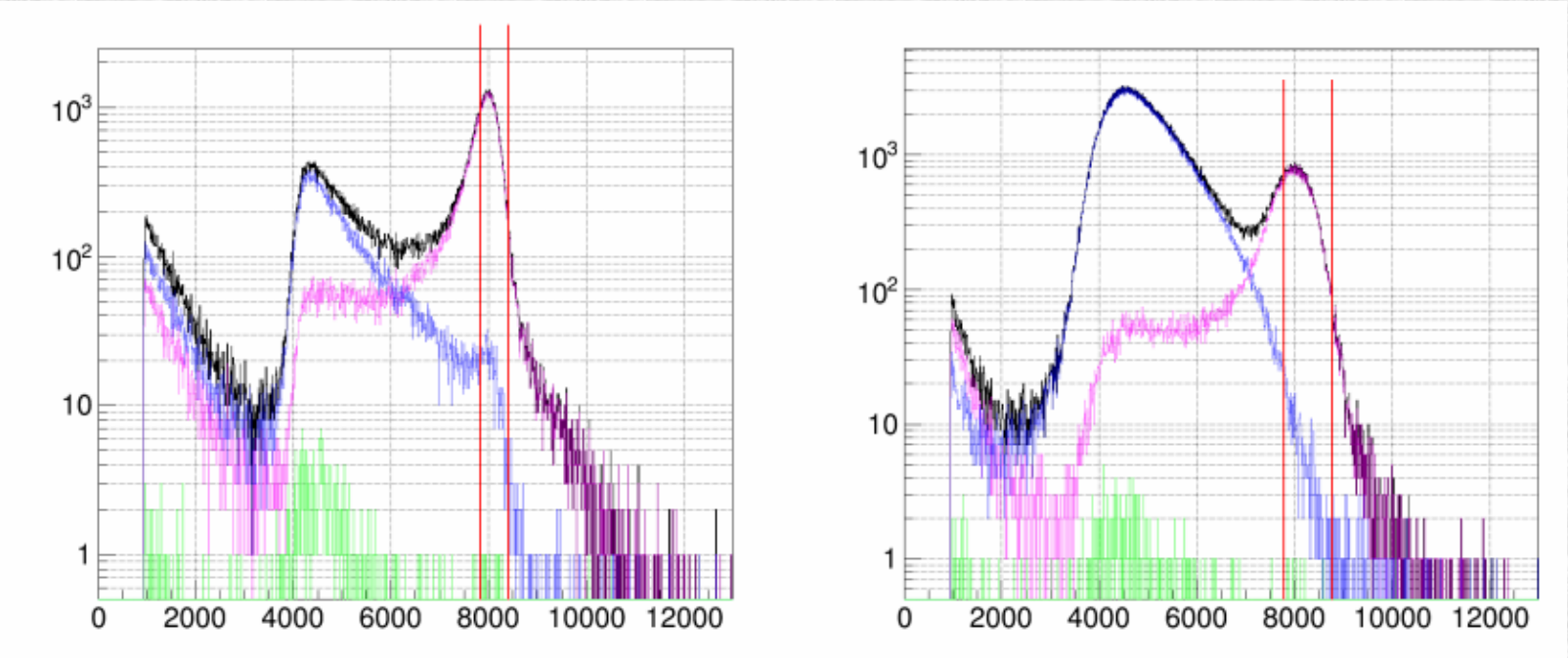
Run II: Foil's Average % of Events Before and After ToF-Cut

TL Pos #	Lebow T (nm)	ToF-Cut [-2 : +2] sigma			ToF-Cut [-3 : +3] sigma		
LEFT Detector		Average % of ***All*** Events Within ToF-Cut and E-Cut	Average % of Events Within E-Cut, **Before** ToF-Cut	Average % of Events Within E-Cut, **After** ToF-Cut	Average % of ***All*** Events Within ToF-Cut and E-Cut	Average % of Events Within E-Cut, **Before** ToF-Cut	Average % of Events Within E-Cut, **After** ToF-Cut
15	1000	37.439	0.013	1.306	37.921	0.010	0.044
3	870	40.454	0.01	1.296	40.947	0.009	0.043
4	750	40.566	0.011	1.293	41.113	0.009	0.040
2	625	39.686	0.009	1.132	39.946	0.007	0.038
5	500	39.07	0.012	1.137	39.471	0.009	0.037
14	350	37.26	0.006	1.016	37.560	0.004	0.036
8	350	37.311	0.008	1.128	38.003	0.006	0.033
1	225	38.82	0.011	1.07	39.308	0.008	0.033
12	50	26.809	0.028	0.855	27.059	0.026	0.038
13	50	26.54	0.03	0.778	26.876	0.028	0.037
15 st.	1000	38.226	0.01	1.215	38.664	0.007	0.041

Run I, Run 8086 on Foil 13, 50nm

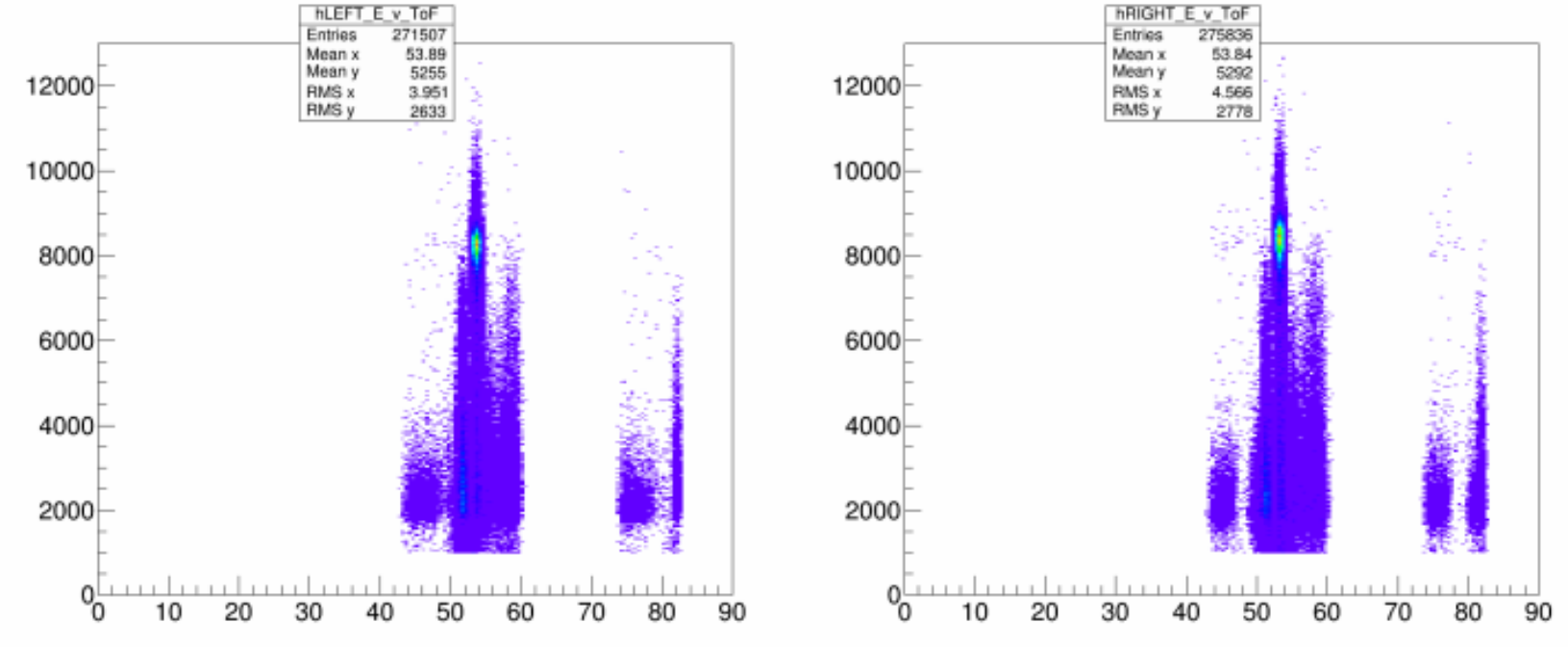


L/R
E vs ToF

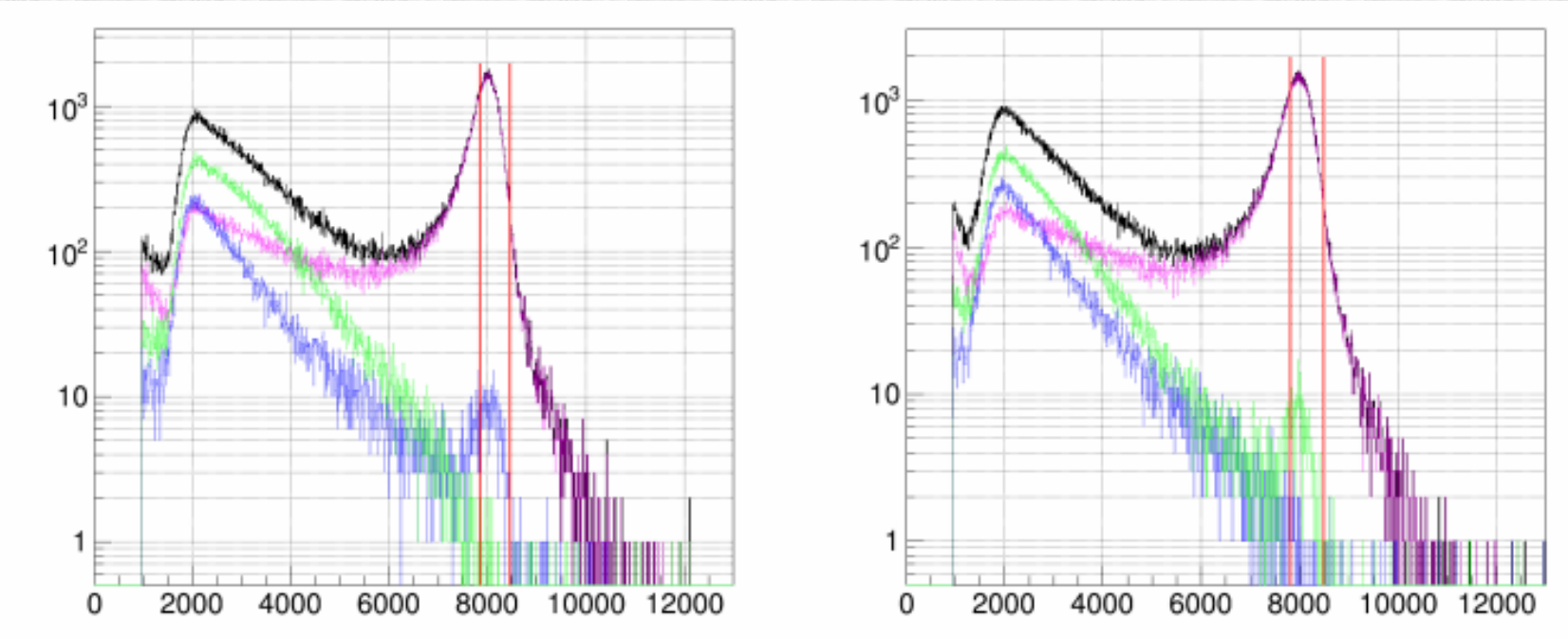


L/R
Energy
Spectra

Run II, Run 8497 on Foil 13, 50nm



L/R
E vs ToF



L/R
Energy
Spectra

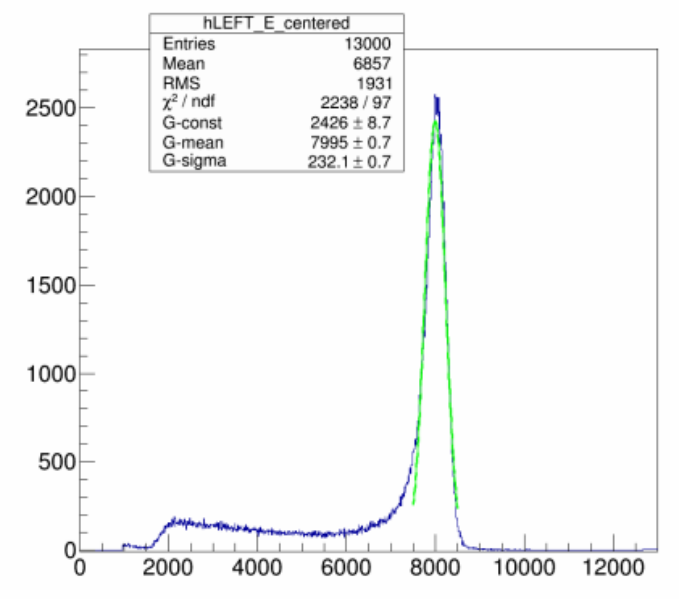
Run I: ToF-Cut vs No-ToF-Cut

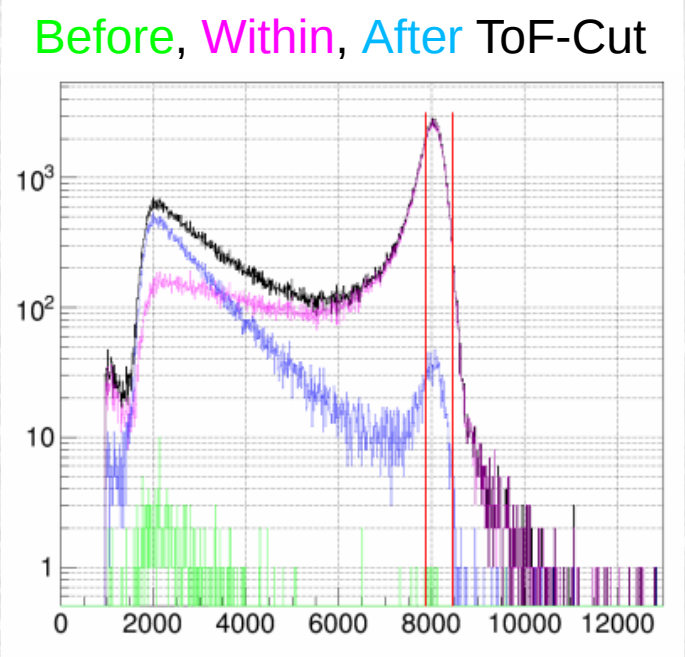
TL # PMT	Lebow Thick. (nm)	Asymmetry (%)				Rates Average Normalized Rate (Hz/uA)			
		With ToF-Cut [-2:+2] Asym +/-	d(Asym)	No ToF-Cut Asym +/-	d(Asym)	With ToF-Cut [-2:+2] Rate +/-	d(Rate)	No ToF-Cut Rate +/-	d(Rate)
15 Low	1000	33.956	0.094	33.925	0.090	179.168	0.136	192.704	0.044
3 Low	870	34.823	0.092	34.786	0.088	151.995	0.113	164.383	0.026
4 Low	750	35.740	0.096	35.692	0.092	130.227	0.102	140.072	0.024
2 Low	625	37.294	0.098	37.293	0.095	94.323	0.076	100.780	0.014
5 Low	500	38.833	0.096	38.776	0.093	71.986	0.057	76.504	0.008
14 Low	350	39.256	0.104	39.212	0.101	60.026	0.051	63.456	0.008
8 High	350	39.206	0.096	39.199	0.095	61.881	0.050	63.730	0.020
1 High	225	40.978	0.083	40.971	0.083	34.952	0.025	35.832	0.006
12 High	50	43.298	0.103	43.257	0.101	7.254	0.006	17.328	0.003
13 High	50	43.487	0.101	43.482	0.099	7.390	0.006	17.569	0.003
15-stab. Low	1000	33.801	0.072	33.766	0.069	181.115	0.106	194.851	0.035
15-stab. High	1000	33.859	0.061	33.834	0.058	182.151	0.092	197.173	0.038

Run I: ToF-Cut vs No-ToF-Cut
Run 7999, 1000nm Foil, LEFT Detector

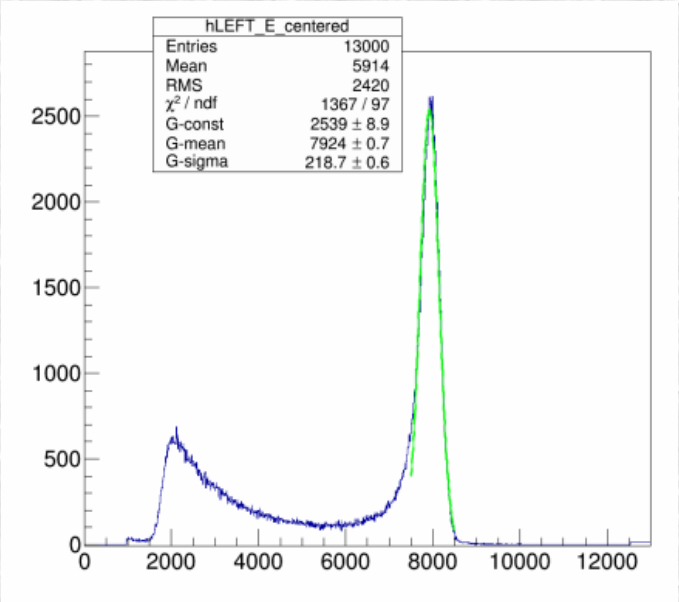
Before, Within, After ToF-Cut

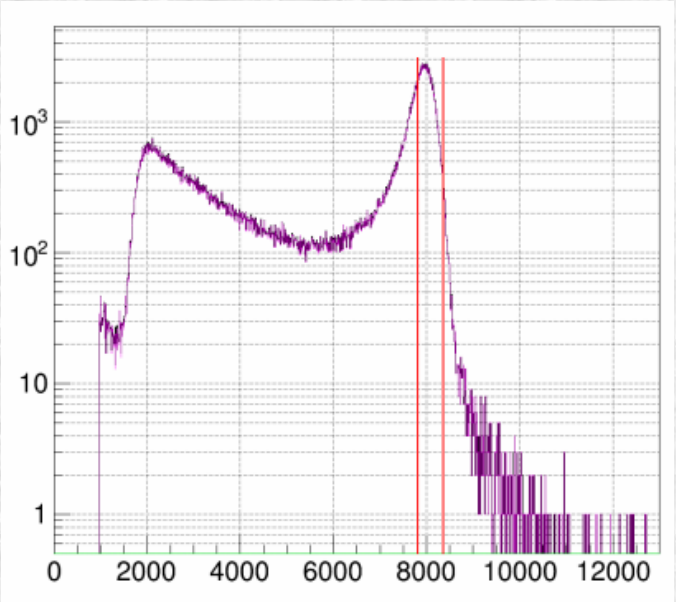
ToF-Cut





No
ToF-Cut





Run II: ToF-Cut vs No-ToF-Cut

TL #	Lebow Thick. (nm)	Asymmetry (%)				Rates Average Normalized Rate (Hz/uA)			
		With ToF-Cut [-2:+2] Asym +/-	d(Asym)	No ToF-Cut Asym +/-	d(Asym)	With ToF-Cut [-2:+2] Rate +/-	d(Rate)	No ToF-Cut Rate +/-	d(Rate)
15	1000	33.992	0.086	33.946	0.082	162.652	0.112	177.192	0.031
3	870	35.028	0.105	34.945	0.100	144.115	0.123	157.671	0.034
4	750	35.891	0.107	35.891	0.102	122.688	0.108	133.838	0.027
2	625	37.193	0.089	37.172	0.085	85.100	0.062	92.874	0.009
5	500	38.717	0.109	38.711	0.104	66.322	0.060	72.866	0.008
14	350	39.190	0.111	39.175	0.106	55.030	0.050	60.094	0.005
8	350	39.456	0.110	39.357	0.105	57.248	0.052	62.171	0.006
1	225	40.934	0.110	40.913	0.104	31.939	0.029	34.876	0.002
12	50	43.448	0.122	43.423	0.119	6.813	0.007	7.252	0.000
13	50	43.471	0.121	43.426	0.117	6.755	0.007	7.155	0.000
15 st.	1000	34.037	0.052	33.993	0.050	169.029	0.071	185.485	0.024