Energy loss

1. reaction point
2. through target: at target wall
3. through target wall: at vacuum
4. through vacuum: at scatter chamber
5. through scatter chamber: at air
6. through air: at MWDC

Table 1 LH2

at LH2		through LH2		thr TG window		thr SC window		At MWDC		total E loss
p	E	p	E	p	E	p	E	p	E	
250.0	32.7	212.3	23.7	209.1	23.0	191.8	19.4	170.9	15.4	17.3
300.0	46.8	277.2	40.1	275.5	39.6	267.0	37.3	258.3	34.9	11.9
400.0	81.7	388.9	77.4	388.2	77.1	384.5	75.7	380.9	74.4	7.3
500.0	124.9	493.2	121.7	492.7	121.5	490.5	120.5	488.5	119.5	5.4
600.0	175.4	595.3	172.9	595.0	172.8	593.5	172.0	592.1	171.2	4.2
700.0	232.3	696.5	230.3	696.3	230.1	695.2	229.5	694.1	228.8	3.5
800.0	294.8	797.2	292.9	797.0	292.8	796.1	292.2	795.3	291.7	3.0
900.0	361.9	897.7	360.2	897.5	360.1	896.8	359.6	896.1	359.1	2.7
1000.0	433.0	998.0	431.5	997.8	431.4	997.2	430.9	996.6	430.5	2.5

Table 2 LD2

at LD2		through LD2		thrTG window		thr SC window		At MWDC		total E loss
p	E	p	E	p	E	p	E	p	E	
250.0	32.7	205.0	22.1	201.5	21.4	182.4	17.6	158.3	13.3	19.5
300.0	46.8	273.0	38.9	271.3	38.4	262.4	36.0	253.3	33.6	13.2
400.0	81.7	386.9	76.7	386.2	76.4	382.4	75.0	378.9	73.6	8.1
500.0	124.9	492.2	121.3	491.7	121.0	489.5	120.0	487.5	119.1	5.8
600.0	175.4	594.6	172.6	594.3	172.4	592.9	171.6	591.5	170.9	4.6
700.0	232.3	696.0	230.0	695.8	229.8	694.7	229.2	693.6	228.5	3.8
800.0	294.8	796.8	292.7	796.6	292.6	795.7	292.0	794.9	291.5	3.3
900.0	361.9	897.3	360.0	897.2	359.9	896.4	359.4	895.7	358.9	3.0
1000.0	433.0	997.7	431.3	997.5	431.2	996.9	430.7	996.3	430.3	2.7

From 6 elastic runs, I use the table 1.
1. For every |q| at the reaction point, the value is p at the target (collumn 1).
2. Look up the value of p at MWDC.
3. plot the expected p at MWDC (from q) vs BB analytical p.
4. plot the expected p at MWDC (from q) vs the correction to BB analytical p.

so this correction is only to Analytical Model.

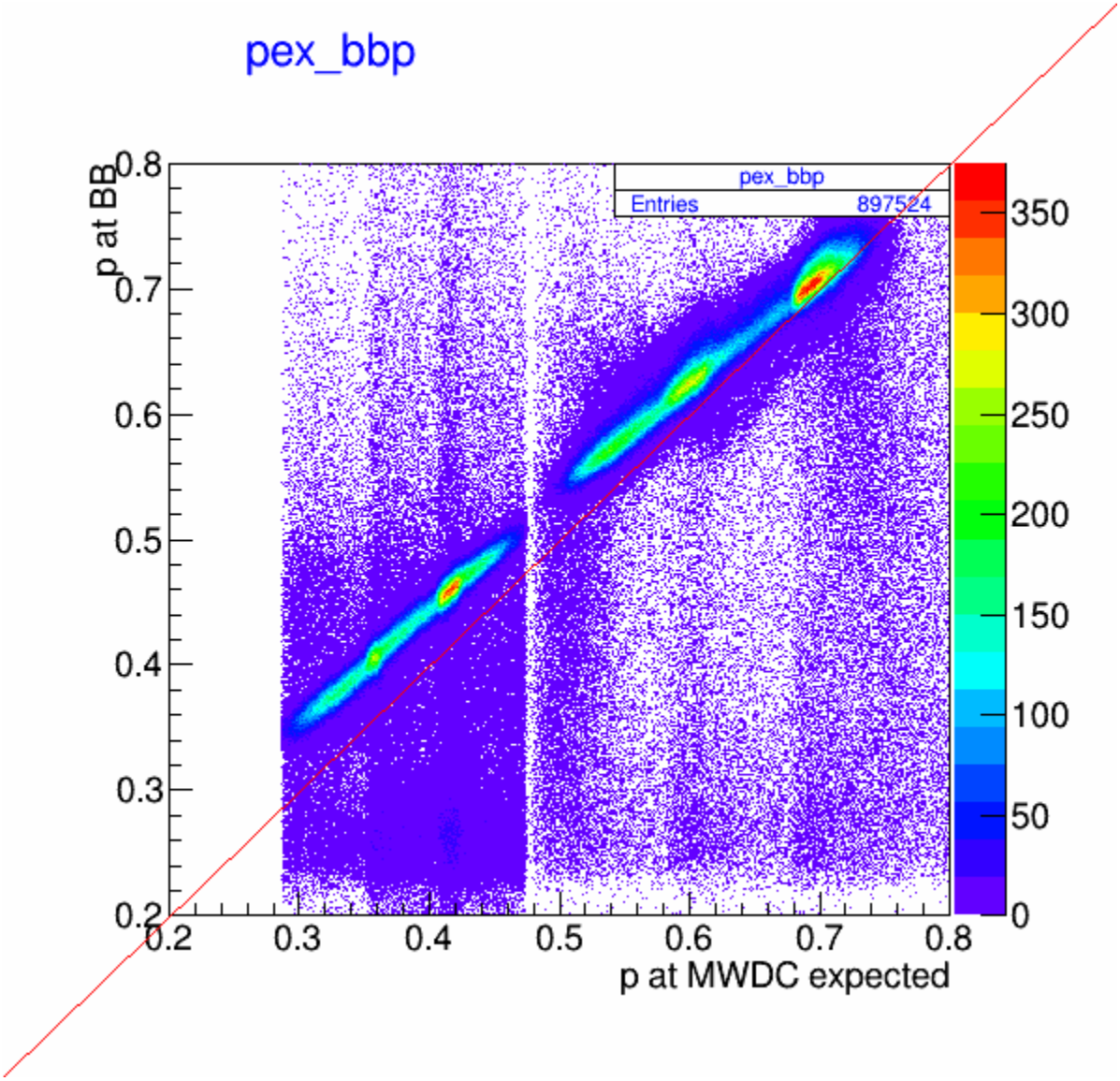

Figure 1: Y= analytical momentum, X = p expected at MWDC after energy loss.

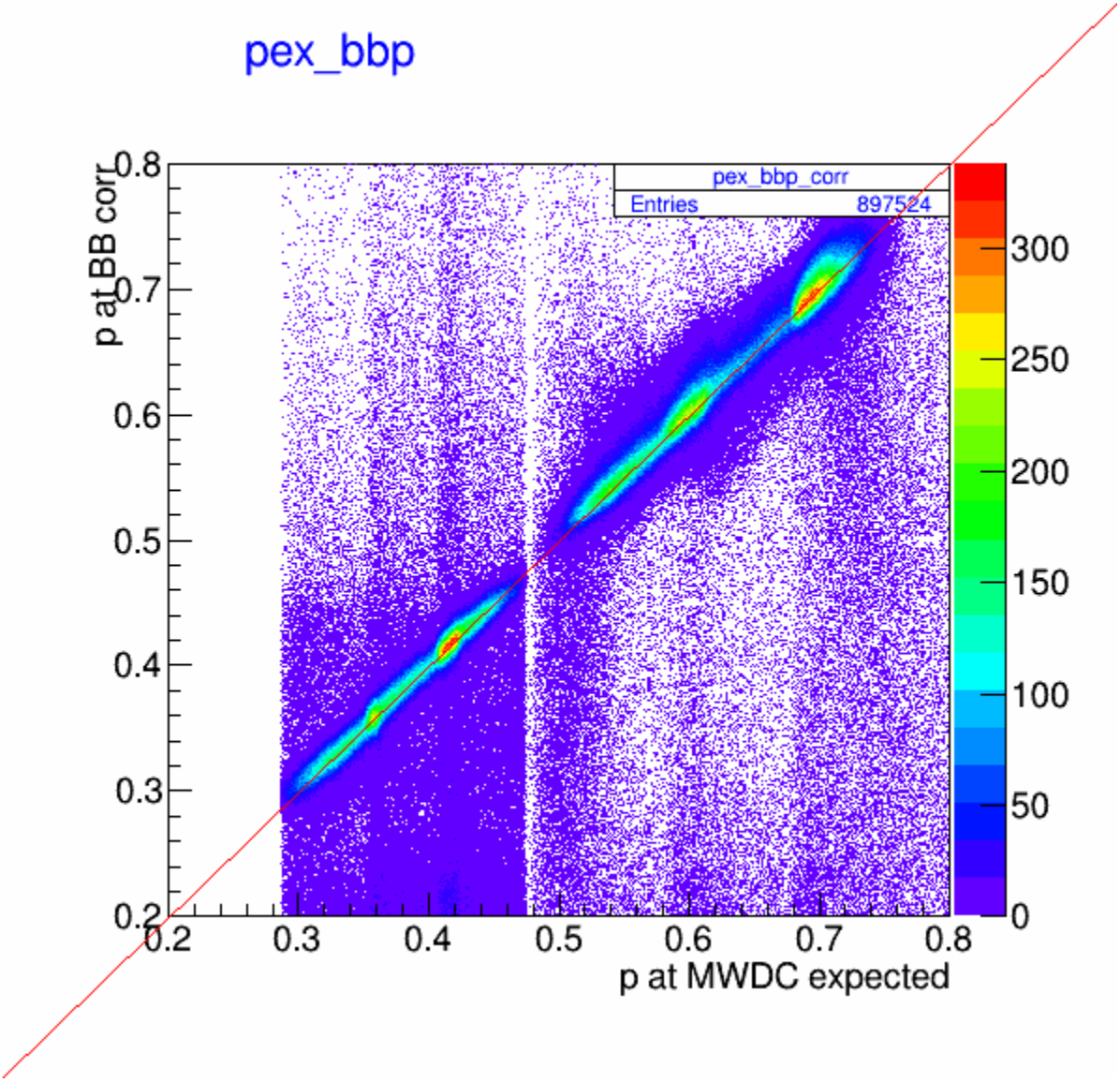

Figure 2 : Y= analytical momentum with polynomial correction, X = p expected at MWDC after energy loss.

The correction.
mom2_factor[3]={-0.034,0.877,0.226};
mom0 = BB_tr_p[trackindex];
mom2 = mom2_factor[2]*mom0*mom0+mom2_factor[1]*mom0+mom2_factor[0];

So for LD2 or other target,
1. The analytical readout at MWDC will be corrected by the same parameter to get the expected momentum at MWDC.

```
mom2_factor[3]={-0.034,0.877,0.226};
mom0 = BB_tr_p[trackindex];
mom2 = mom2_factor[2]*mom0*mom0+mom2_factor[1]*mom0+mom2_factor[0];
```

2. The actual momentum “at the target” will be the reverse look up of table 2 for LD2. Compare the expected momentum (3rd from last column) then pick the first column.
Or
2*. using the fitting parameter to translate BB mom at MWDC to target mom.
Two data section:
1. from 150 to 450 MeV at MWDC fitting with polynomial power 2
2. from 450 to 1000 MeV at MWDC fitting with linear

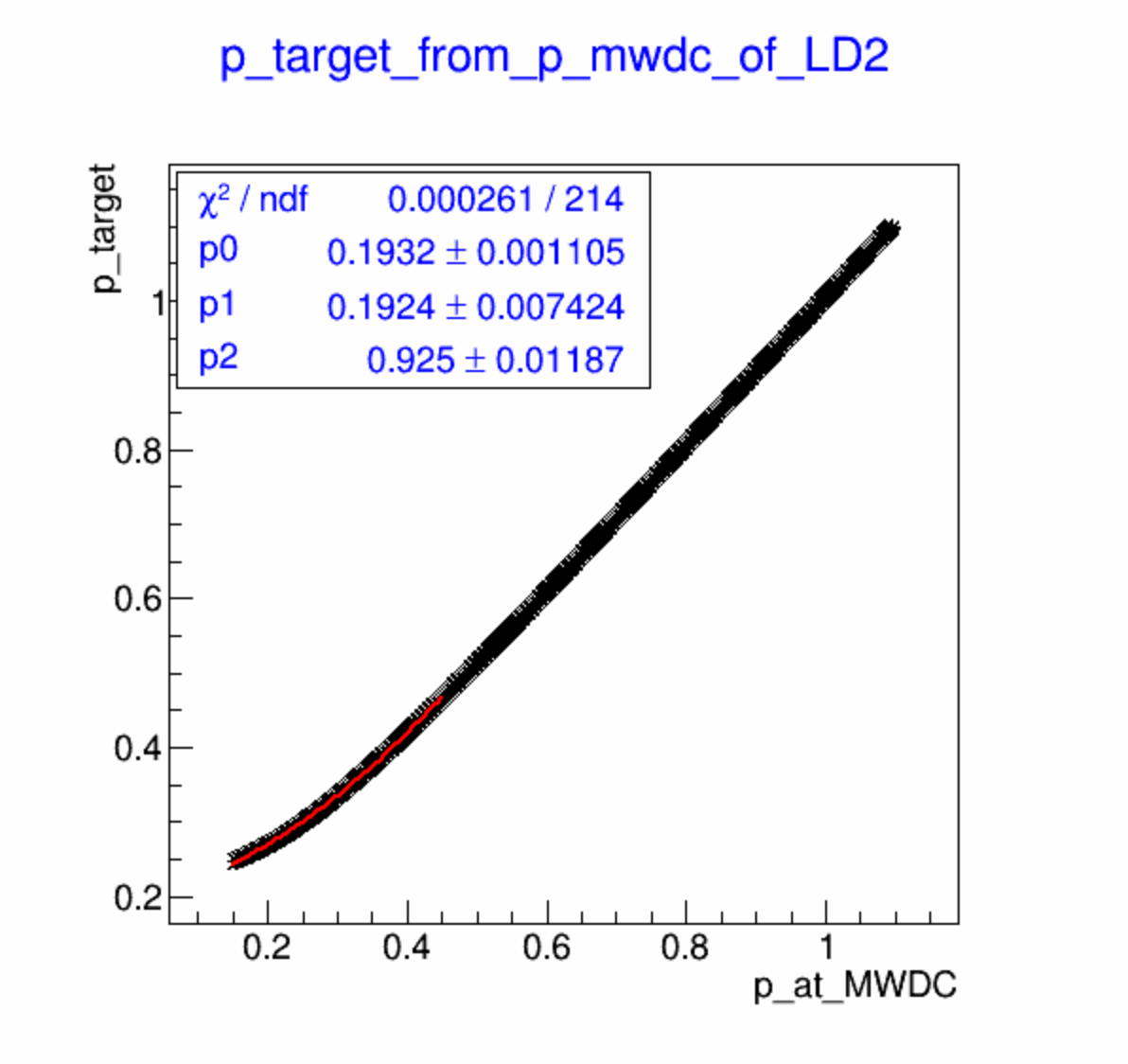

Figure 3.1: translate momentum at MWDC to the momentum at the target for LD2 at <=450 MeV

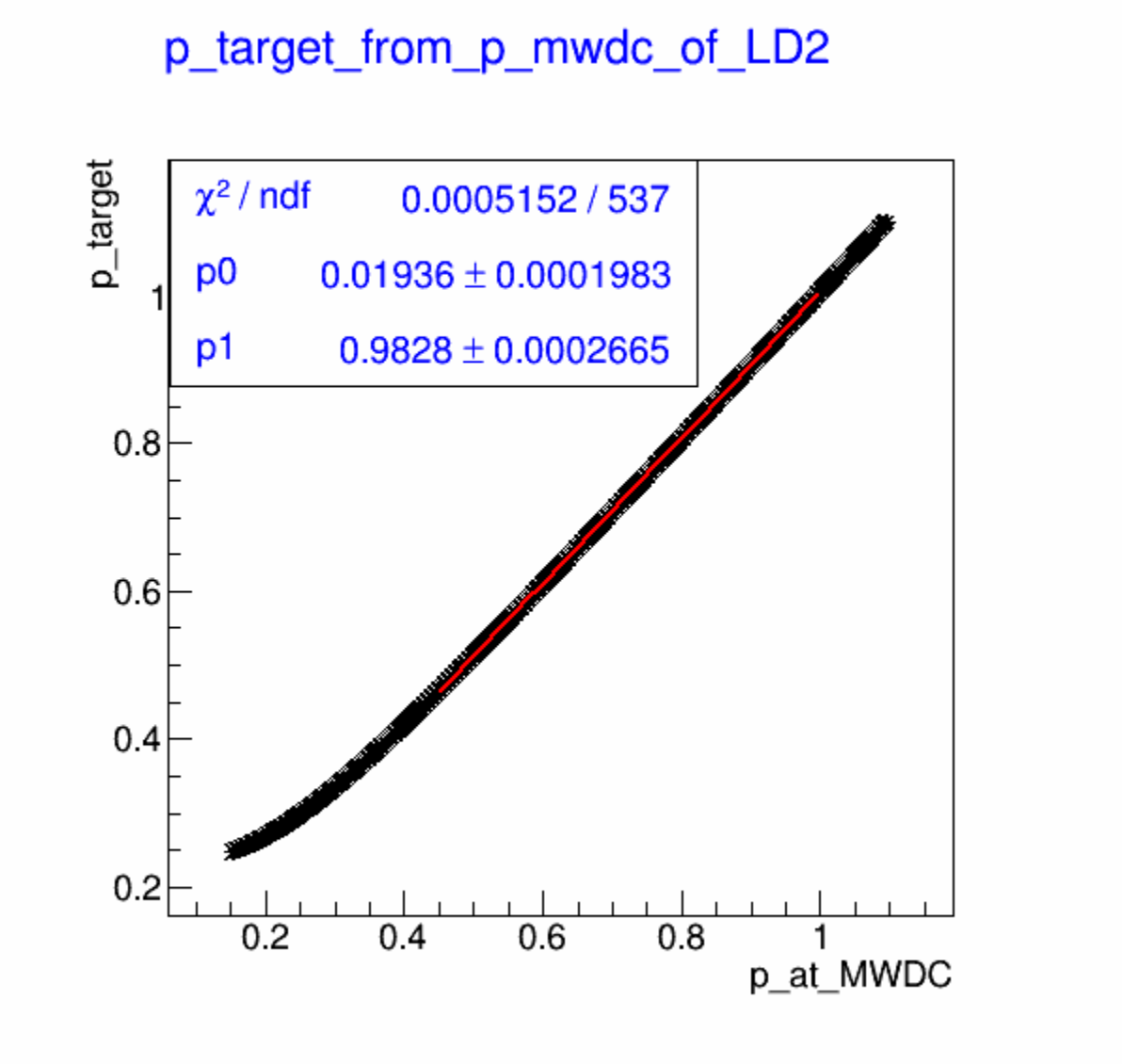

Figure 3.2 translate momentum at MWDC to the momentum at the target for LD2 at >450 MeV to <1000 MeV

1. from 150 to 450 MeV at MWDC:
p_target = 0.9250*p_mwdc*p_mwdc + 0.1924*p_mwdc + 0.1932

2. from 450 to 1000 MeV at MWDC fitting with linear
p_target = 0.9828*p_mwdc+ 0.0194