

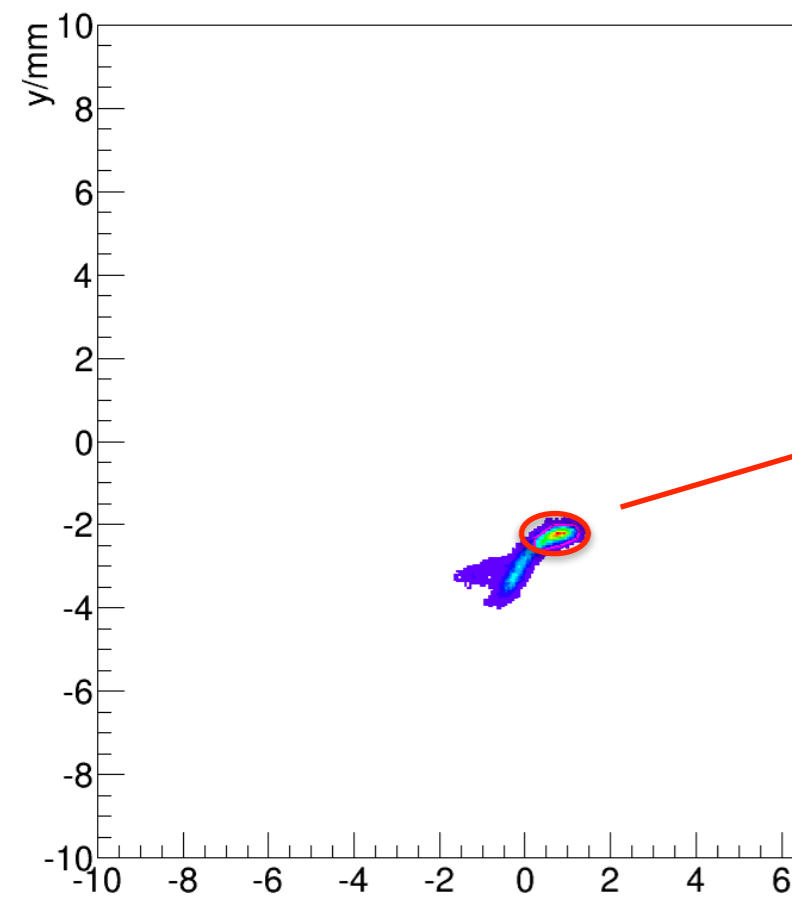
Optics Status Update

Chao Gu

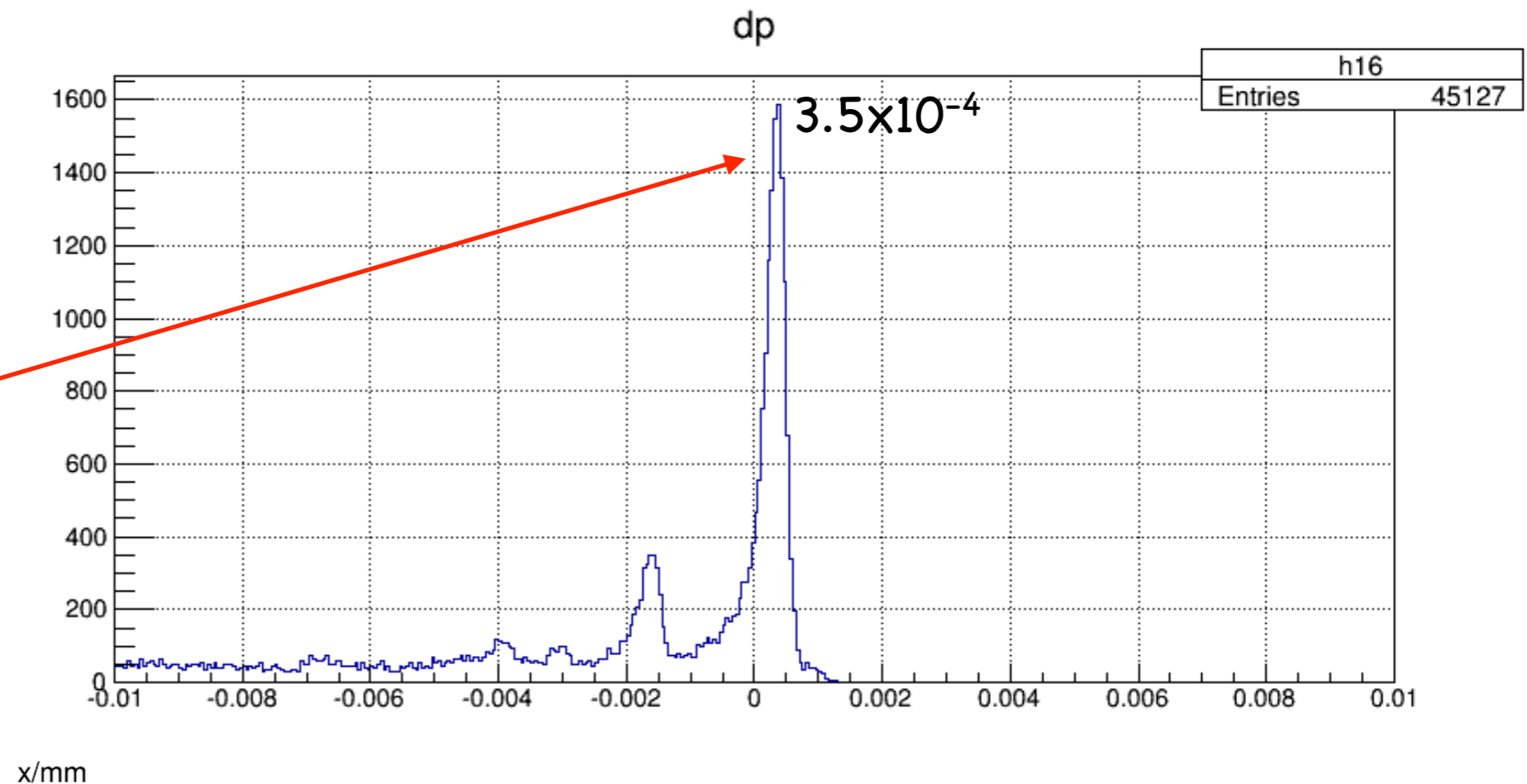
Optics Status Update

- Problem: horizontal beam position changes dp reconstruction

BPM y vs. BPM x

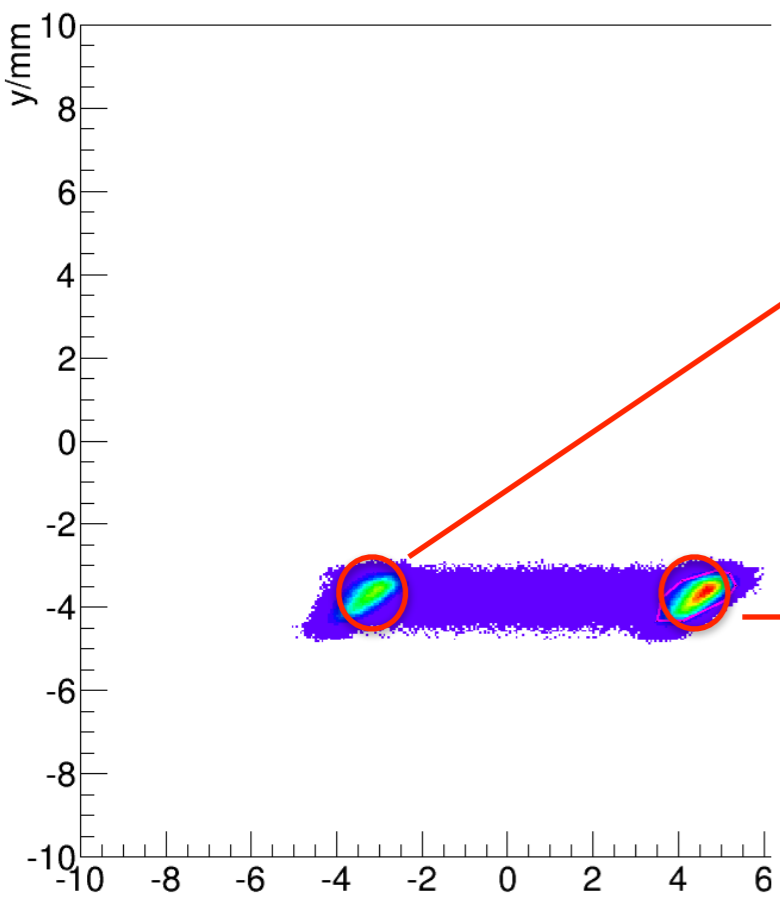


Run 5585

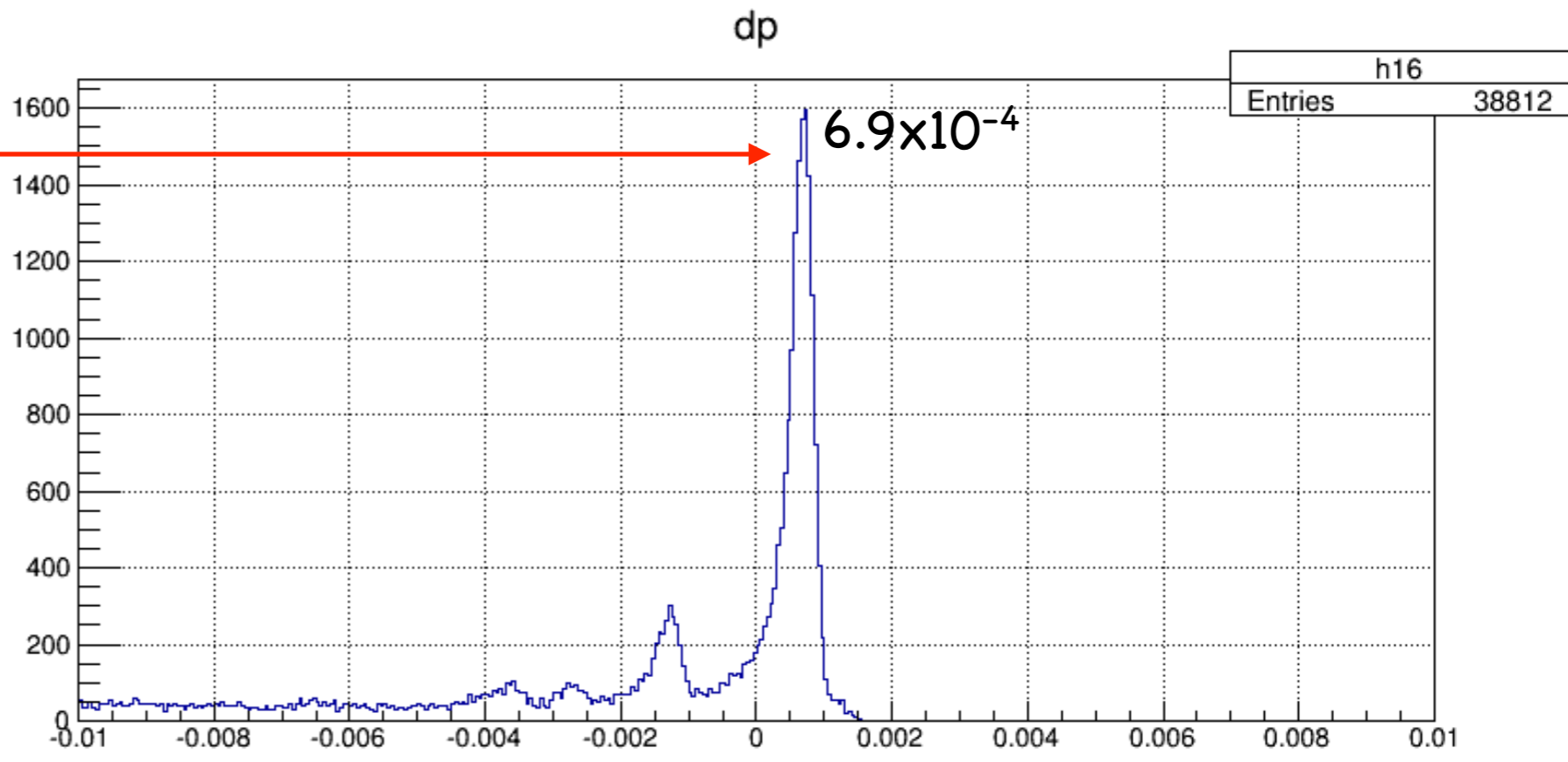
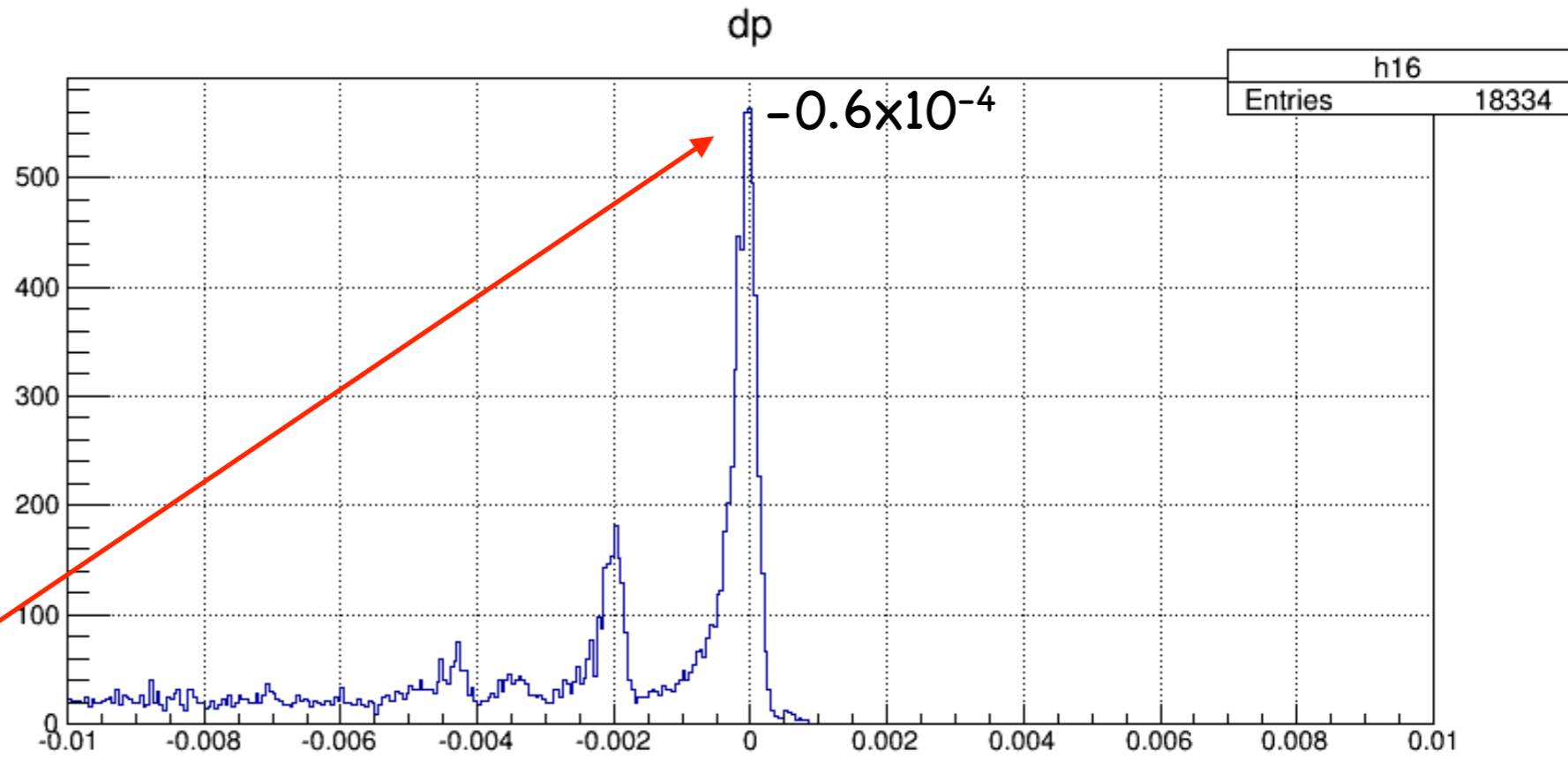


Only selected central hole

BPM y vs. BPM x



Run 5597
Beam Scan Run at
horizontal direction



3 Only selected central hole

Optics Status Update

- It is useful to do a fully check of the relations between the reconstructed kinematics and the beam position since we do not have enough constraints:
 - Delta scan runs 5592 (-3%), 5594 (-1%), 5585 (0%), 5588 (1%), 5590 (3%)
 - Beam position scans 5595 (vertical), 5597 (horizontal)
- Check if the reconstructed kinematics correlate to the beam position with all of these runs
 - If so, fit a linear correction

Optics Status Update

	X_{tg}/mm	Y_{tg}/mm	T_{cal}	T_{rec}	$T_{cal}-T_{rec}$
5592	4.60E-03	4.28E-04	-5.67E-03	-5.79E-03	1.20E-04
5594	3.76E-03	3.68E-03	-4.65E-03	-5.99E-03	1.34E-03
5585	2.57E-03	1.99E-03	-3.11E-03	-4.59E-03	1.48E-03
5588	3.09E-03	1.41E-03	-3.84E-03	-4.11E-03	2.70E-04
5590	4.18E-03	8.95E-04	-5.10E-03	-5.10E-03	0.00E+00
5595, U	4.56E-04	4.10E-03	-7.10E-04	4.25E-04	-1.14E-03
5595, D	7.24E-03	4.69E-03	-9.05E-03	-1.08E-02	1.75E-03
5597, L	4.42E-03	-1.88E-03	-5.66E-03	-6.36E-03	7.00E-04
5597, R	3.78E-03	5.71E-03	-4.27E-03	-2.71E-03	-1.56E-03

Theta

Optics Status Update

	X_{tg}/mm	Y_{tg}/mm	P_{cal}	P_{rec}	$P_{cal}-P_{rec}$
5592	4.60E-03	4.28E-04	-6.72E-04	-2.80E-04	-3.92E-04
5594	3.76E-03	3.68E-03	-4.51E-03	-4.83E-03	3.20E-04
5585	2.57E-03	1.99E-03	-2.61E-03	-3.40E-03	7.90E-04
5588	3.09E-03	1.41E-03	-1.78E-03	-2.37E-03	5.90E-04
5590	4.18E-03	8.95E-04	-1.22E-03	-2.02E-03	8.00E-04
5595, U	4.56E-04	4.10E-03	-4.94E-03	-2.94E-03	-2.00E-03
5595, D	7.24E-03	4.69E-03	-5.67E-03	-4.02E-03	-1.65E-03
5597, L	4.42E-03	-1.88E-03	2.53E-03	5.20E-04	2.01E-03
5597, R	3.78E-03	5.71E-03	-7.19E-03	-6.95E-03	-2.40E-04

Phi

Optics Status Update

	X_{tg}/mm	Y_{tg}/mm	dp_{cal}	dp_{rec}	$dp_{cal}-dp_{rec}$
5592	4.60E-03	4.28E-04	-2.97E-02	-2.91E-02	-6.00E-04
5594	3.76E-03	3.68E-03	-9.98E-03	-9.75E-03	-2.33E-04
5585	2.57E-03	1.99E-03	1.33E-04	3.55E-04	-2.22E-04
5588	3.09E-03	1.41E-03	1.04E-02	1.07E-02	-2.70E-04
5590	4.18E-03	8.95E-04	3.11E-02	3.14E-02	-2.50E-04
5595, U	4.56E-04	4.10E-03	1.93E-04	8.18E-04	-6.25E-04
5595, D	7.24E-03	4.69E-03	1.49E-04	-3.90E-04	5.39E-04
5597, L	4.42E-03	-1.88E-03	-8.48E-05	-5.56E-05	-2.92E-05
5597, R	3.78E-03	5.71E-03	-1.92E-05	6.98E-04	-7.18E-04

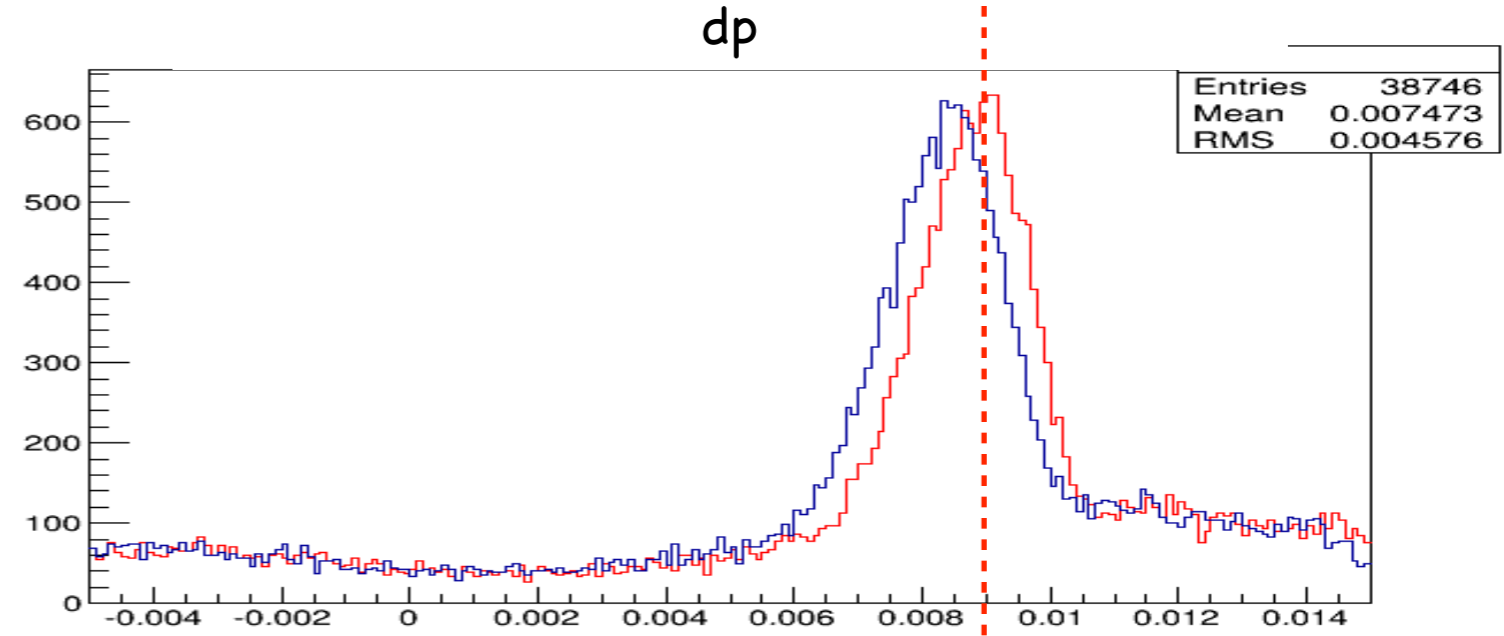
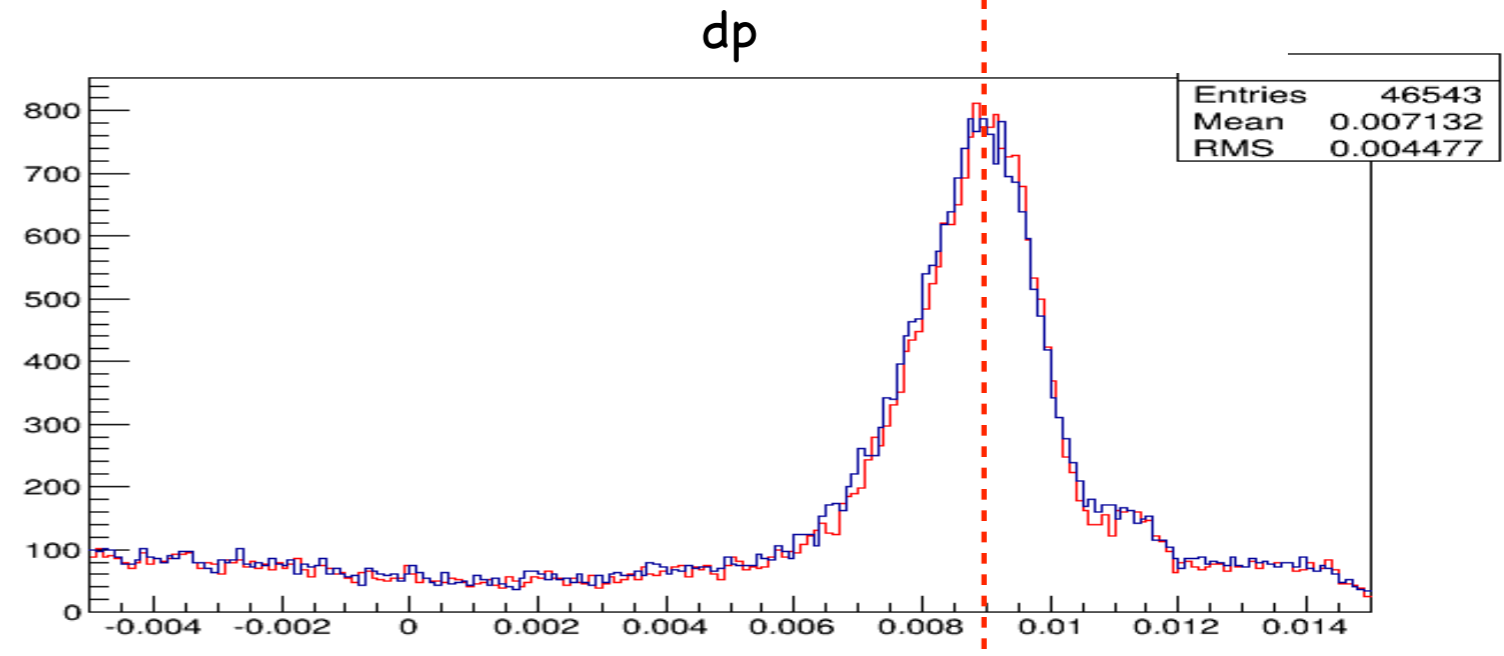
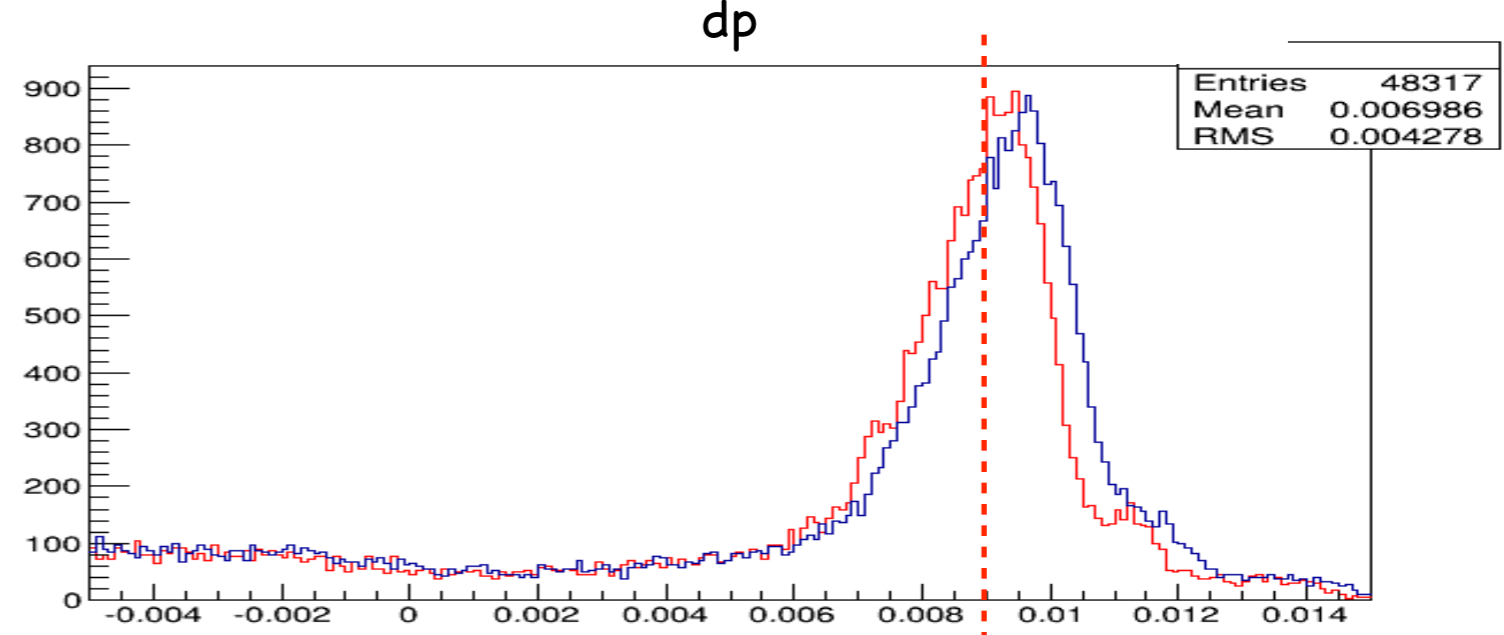
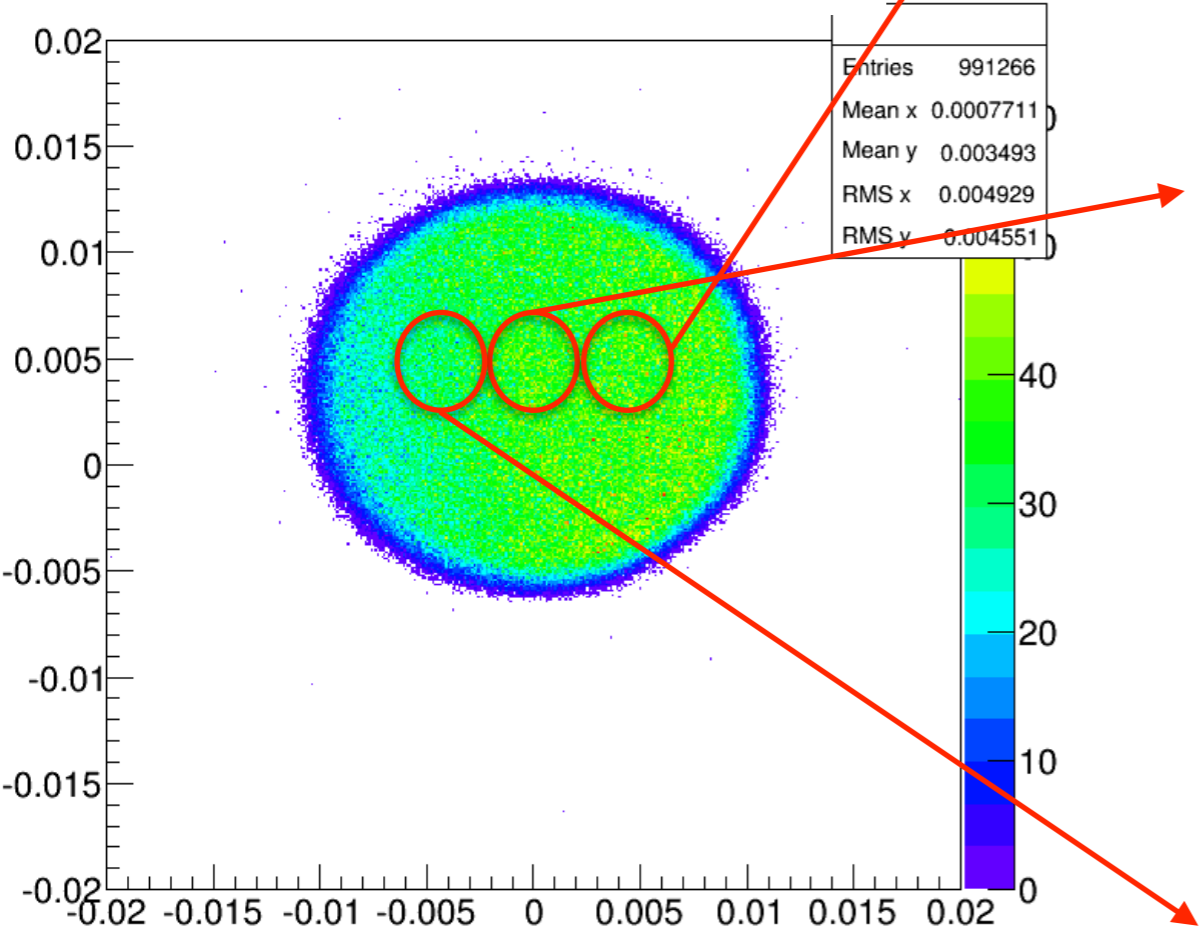
dp

Optics Status Update

- Fit result:
 - $\theta = \theta_{\text{matrix}} + 0.313 \times X_{\text{tg}}$
 - $\varphi = \varphi_{\text{matrix}} - 0.377 \times Y_{\text{tg}}$
 - $dp = dp_{\text{matrix}} + 0.140 \times X_{\text{tg}} - 0.090 \times Y_{\text{tg}}$
- These results already contains extended target correction
- X_{tg} and Y_{tg} are effective beam position calculated from the beam position from beam package (BPM+raster)

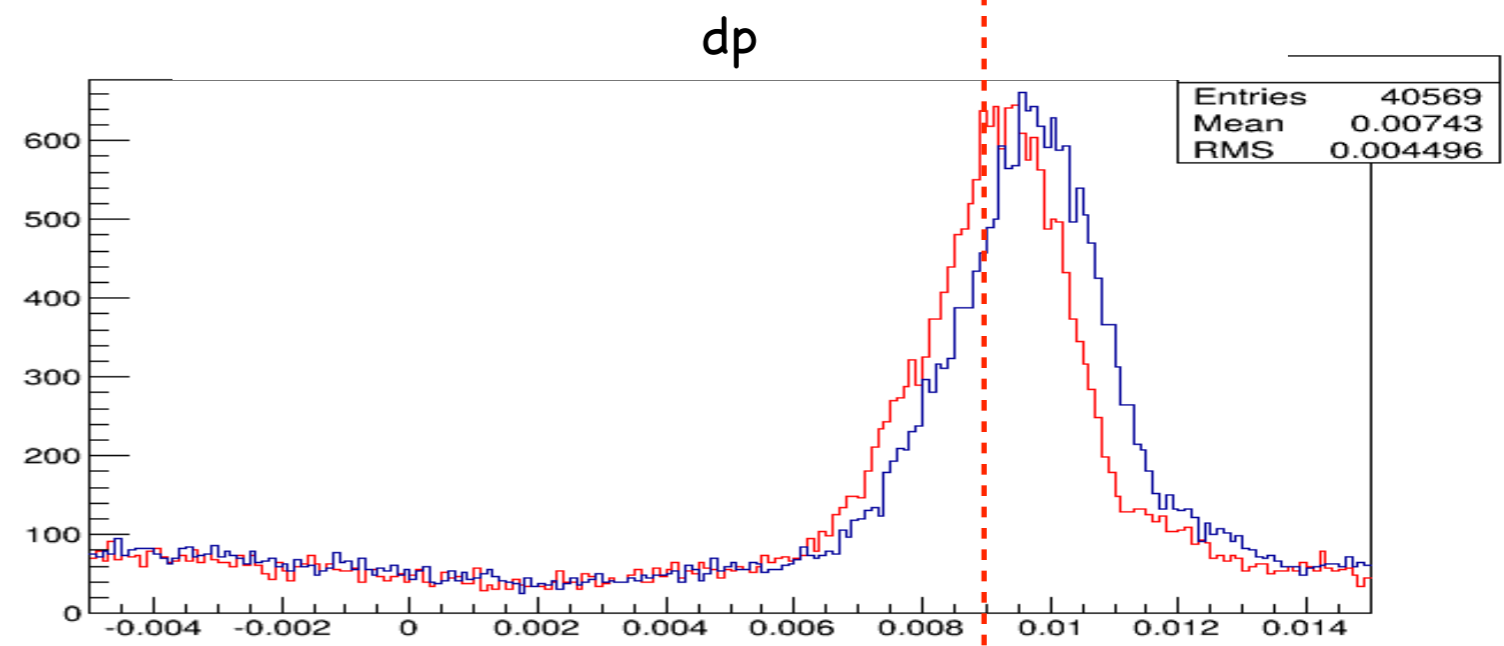
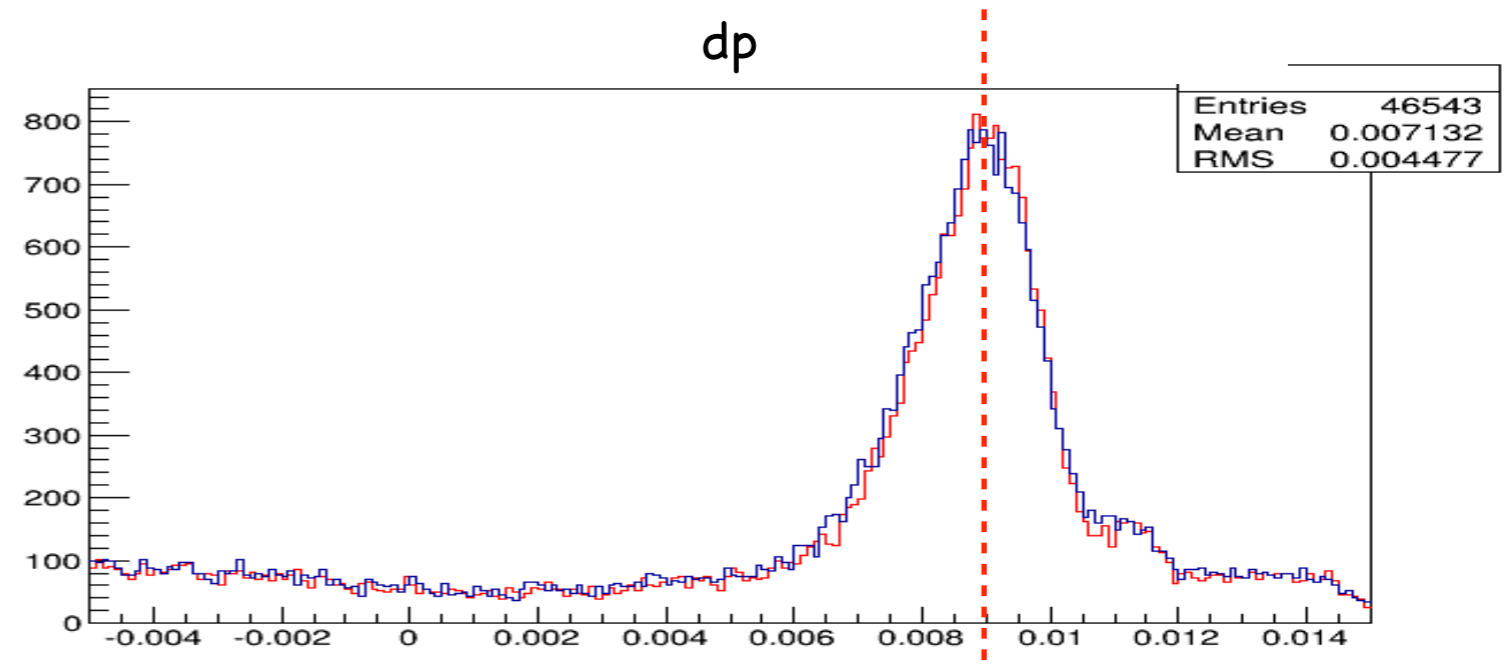
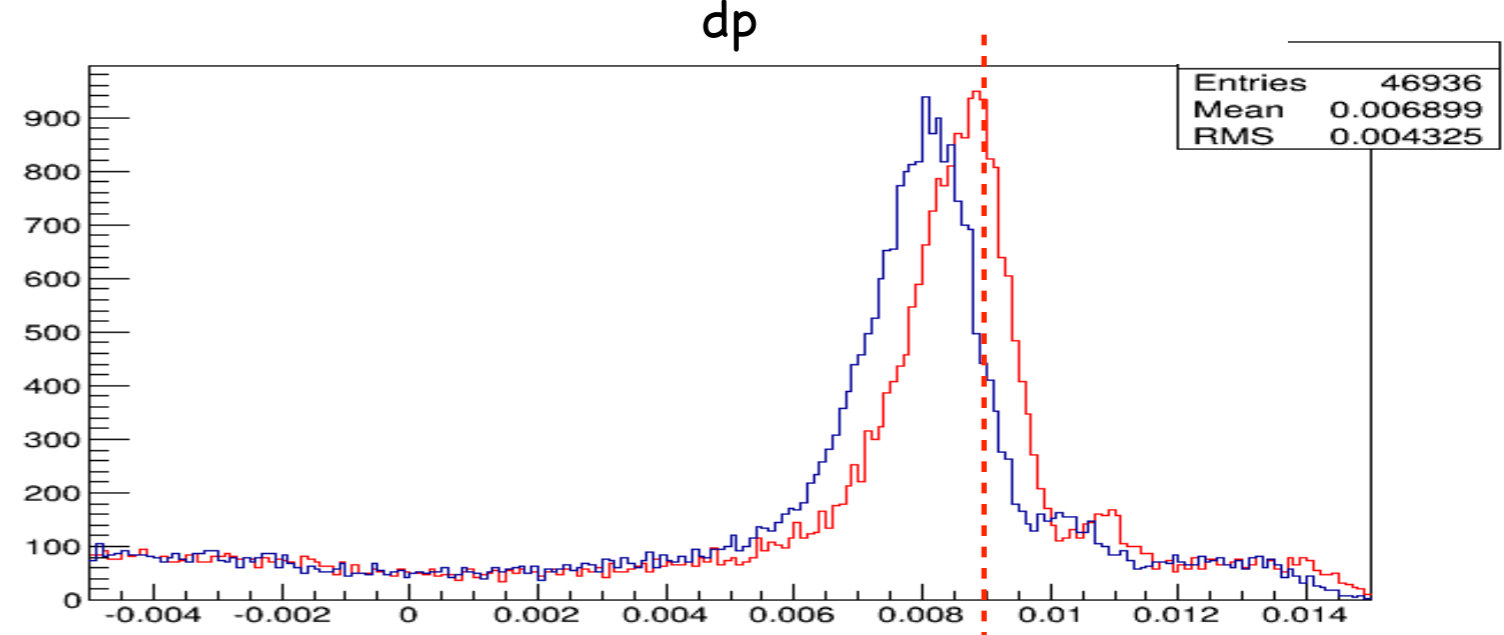
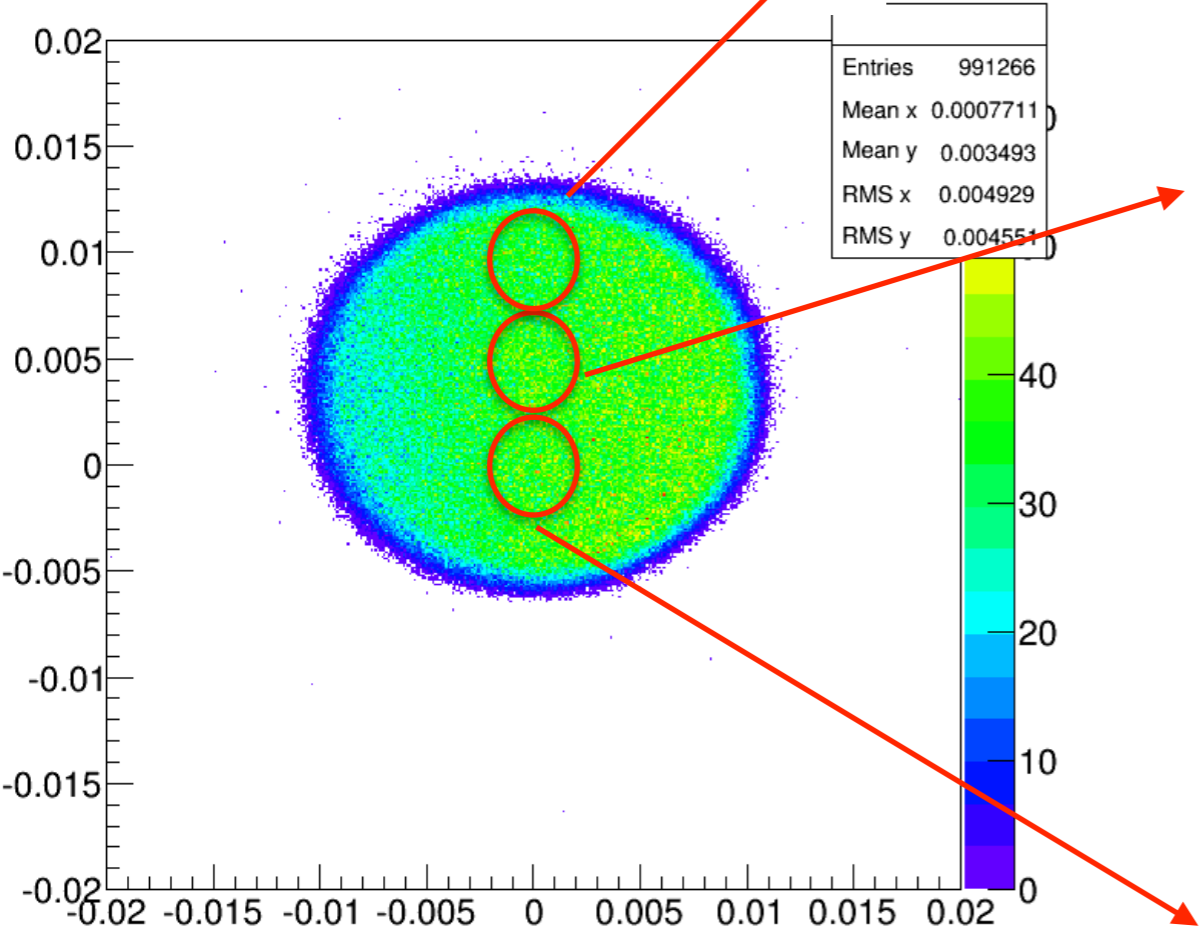
- Test with run 5650 (production run)

X vs Y



- Test with run 5650 (production run)

X vs Y



Optics Status Update

- Check the other settings