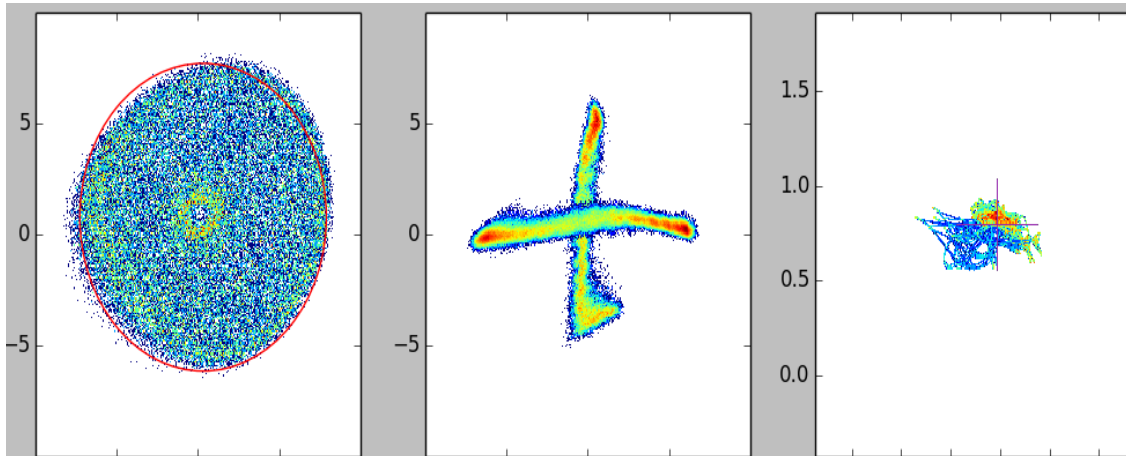


BPM calibration for 3/14 optics run

Pengjia Zhu
11/6/2013

Presentation last week



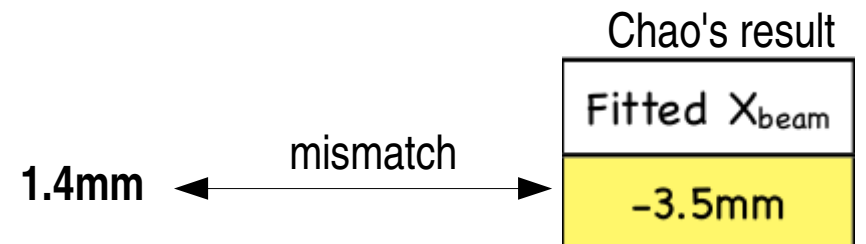
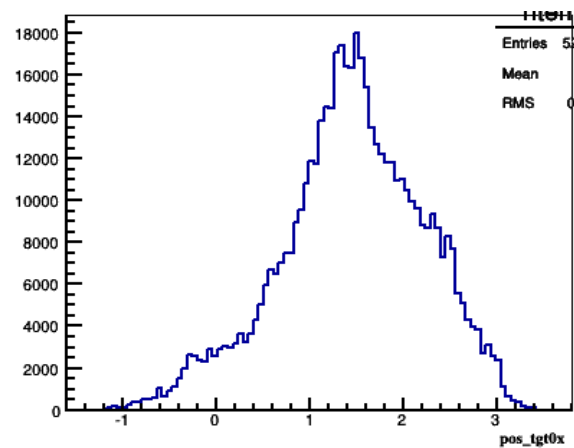
$$X_{\text{harp}} = c + ax + by$$

c: from harp scan data

a,b: raster size at BPM B +

minimization fit for two slopes

(run with only raster x on + run with only raster y on)



Uncertainty for this method(rough calculation)

2Hz BPM A uncertainty(x,y,z,mm): 0.15 0.16 0.12

Harp pos uncertainty(x,y,z,mm): 0.15 0.16 0.12

2Hz BPM B resolution(x,y,mm): 0.24 0.17

→ BPM B offset uncertainty(c,mm): 0.38 0.37

Raster size uncertainty at BPM A(x,y,mm):0.38, 0.24

Raster size uncertainty at target(didn't include hole size uncertainty,only from fit)(x,y,mm):0.66, 0.59

→ Raster size uncertainty at BPM A(x,y,mm):0.33, 0.24

→ BPM B uncertainty(x,y,z,mm): 0.56, 0.44, 0.12

→ **Position uncertainty at target(x,y,theta,phi,mm,rad):**

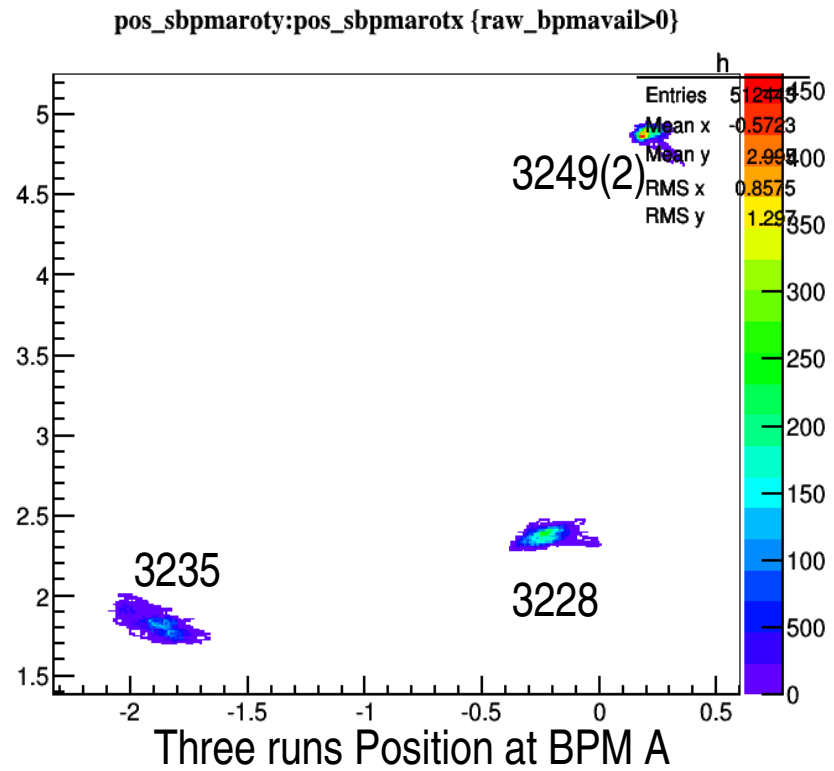
2.1 1.7 0.0018 0.0022

Three harp scan runs available for 3/16 div=2 setting

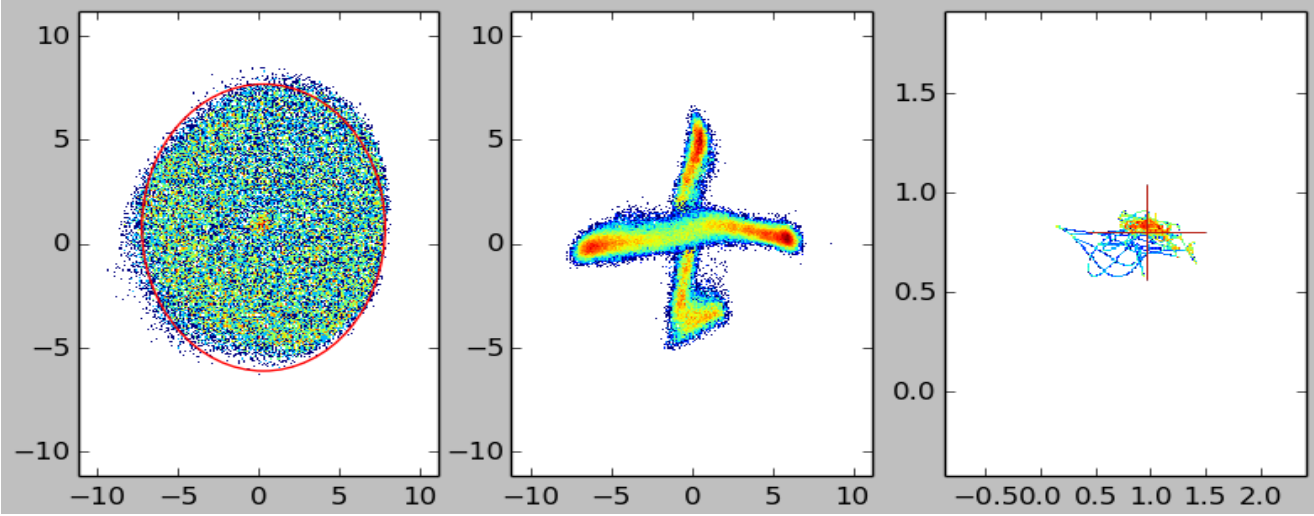
3228 filter=6(2600Hz),div=2

3235 filter=6,div=2

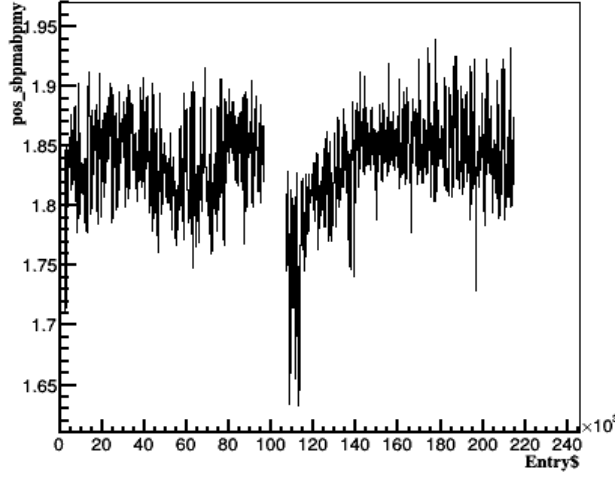
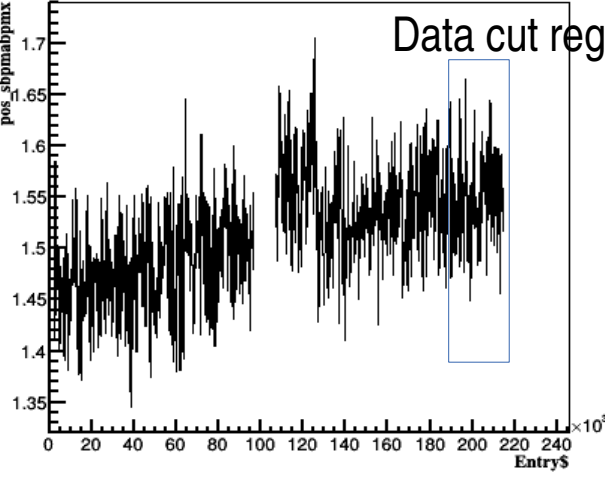
3249(2) filter=8(700Hz),div=2



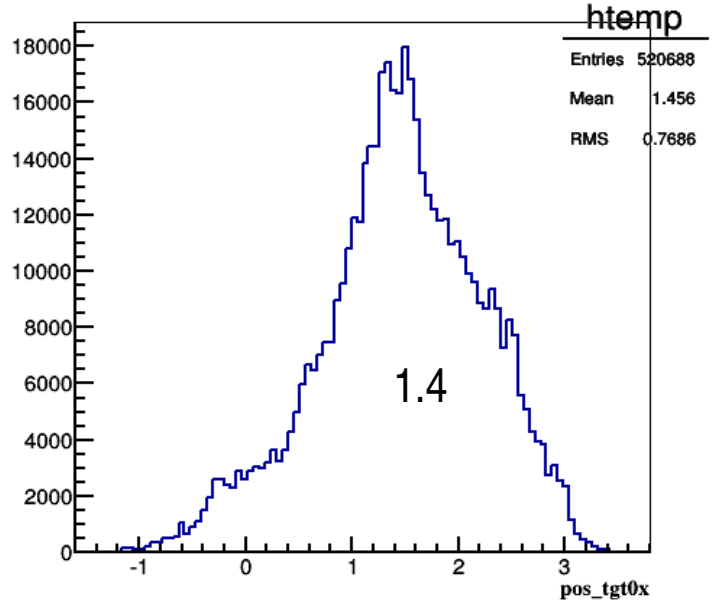
Use 3228 to calibrate c



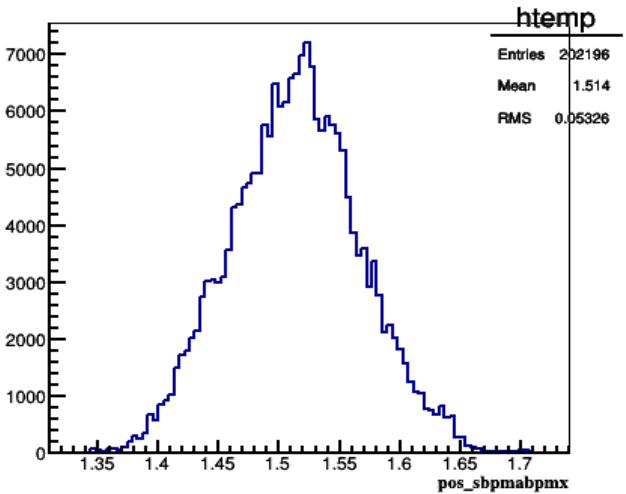
pos_sbpma**bp**mx:Entry\$ {raw_bpmavail>0}



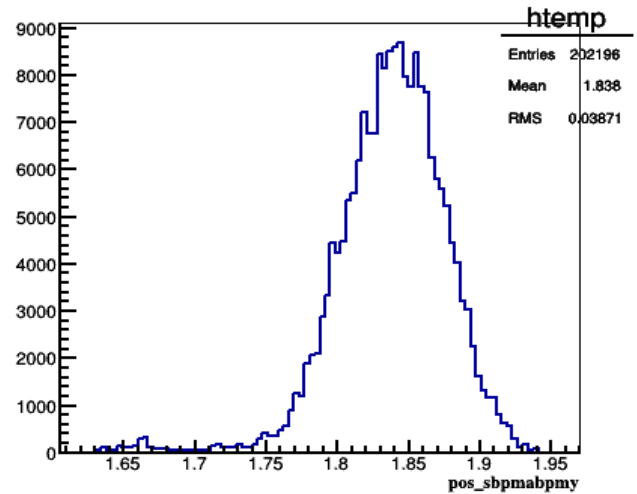
pos_tgt0x {raw_bpmavail>0.5}



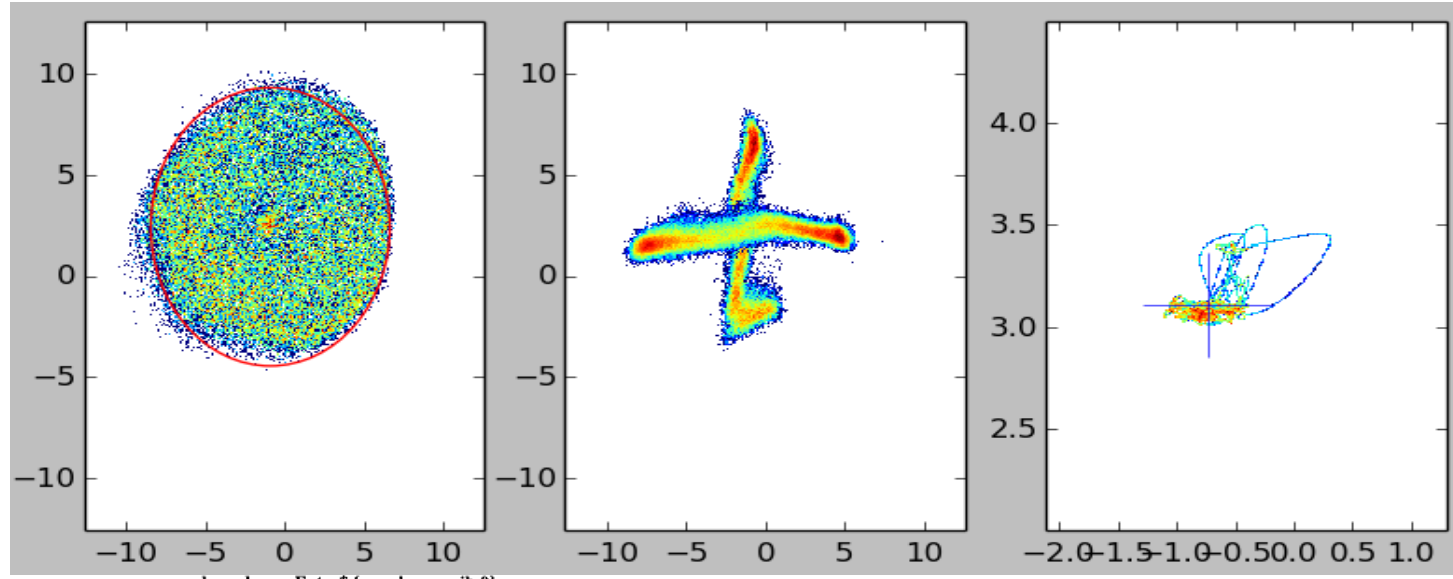
pos_sbpma**bp**mx {raw_bpmavail>0}



pos_sbpma**bp**my {raw_bpmavail>0}

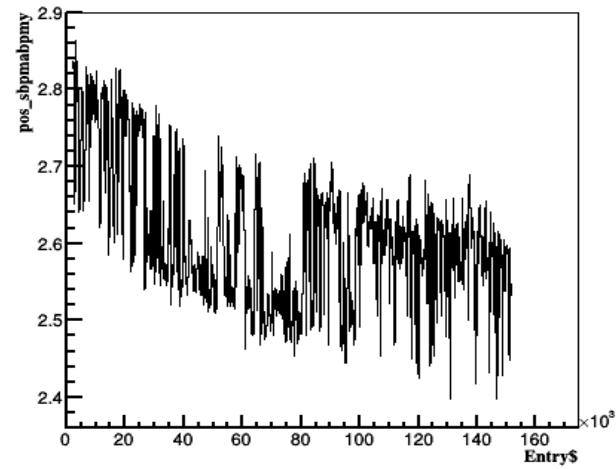
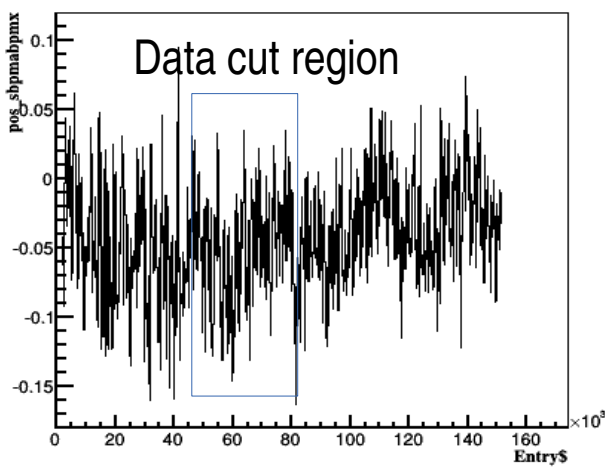


Use 3235 to calibrate c

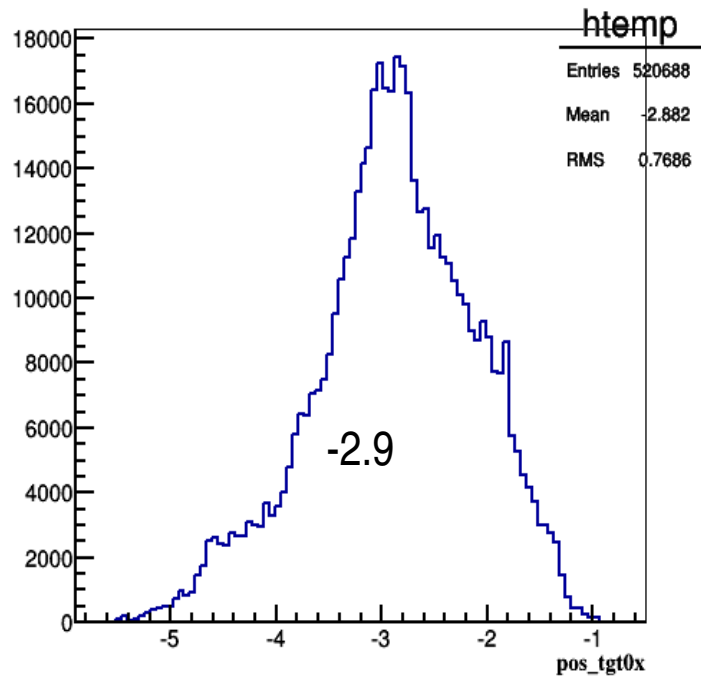


pos_sbpmabpmx:Entry\${raw_bpmavail>0}

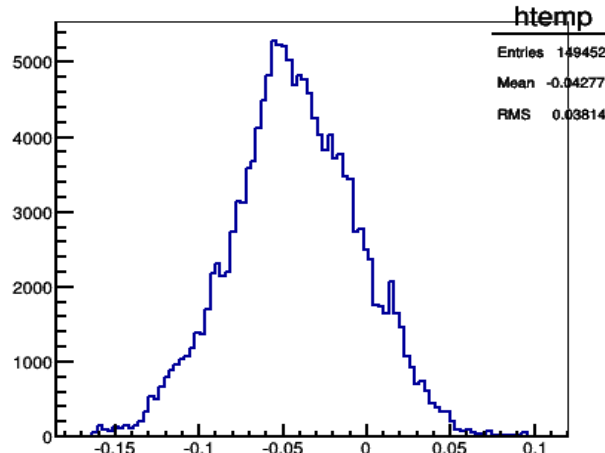
pos_sbpmabpmy:Entry\${raw_bpmavail>0}



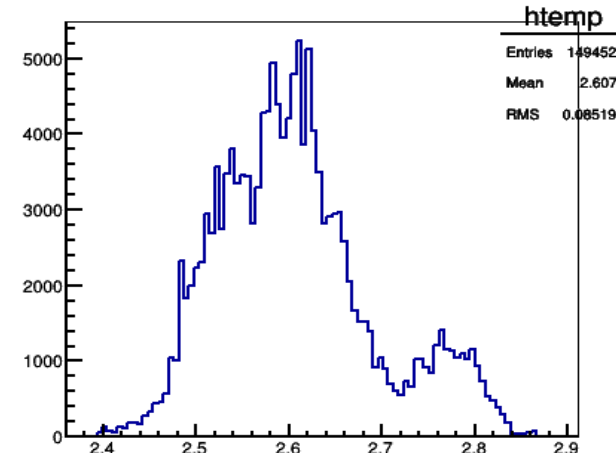
pos_tgt0x {raw_bpmavail>0.5}



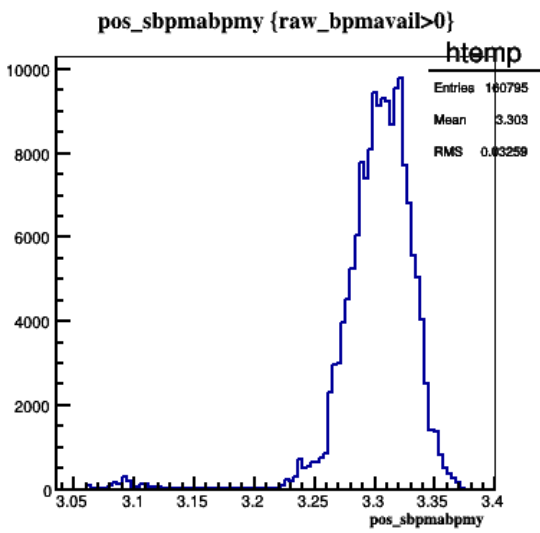
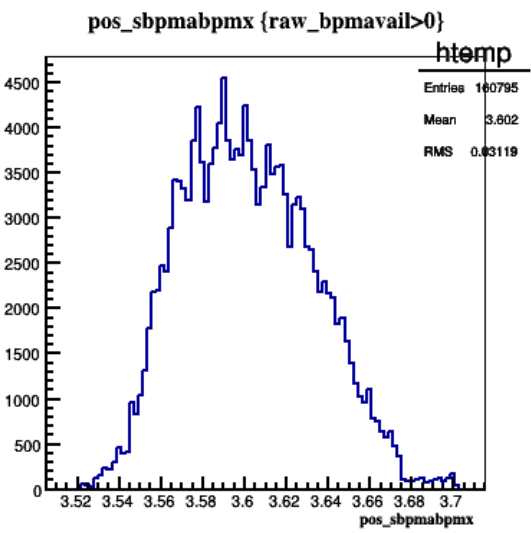
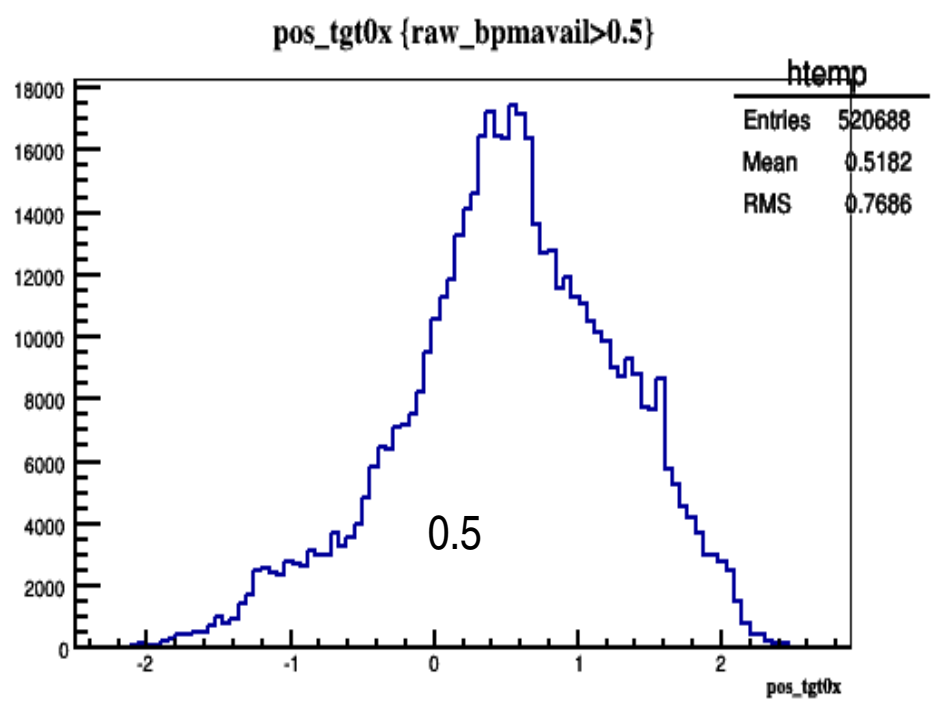
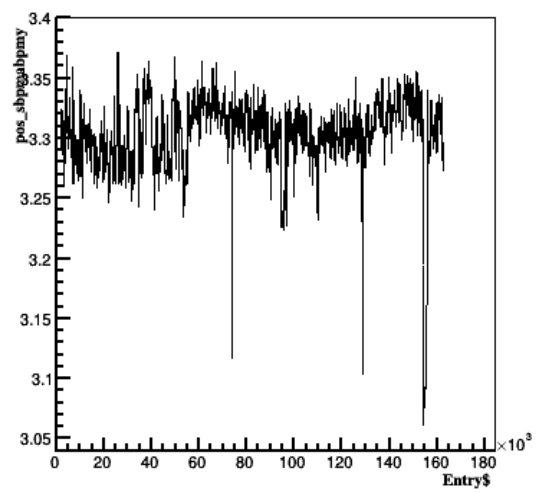
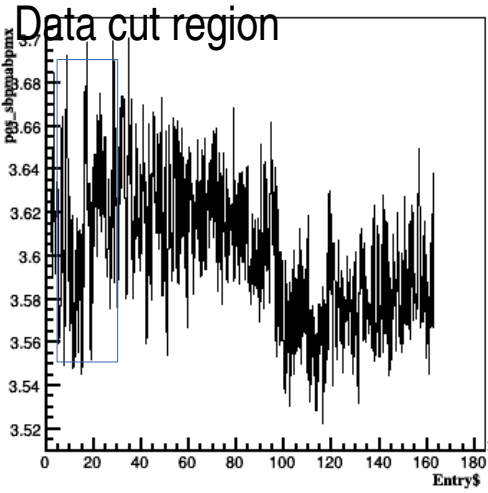
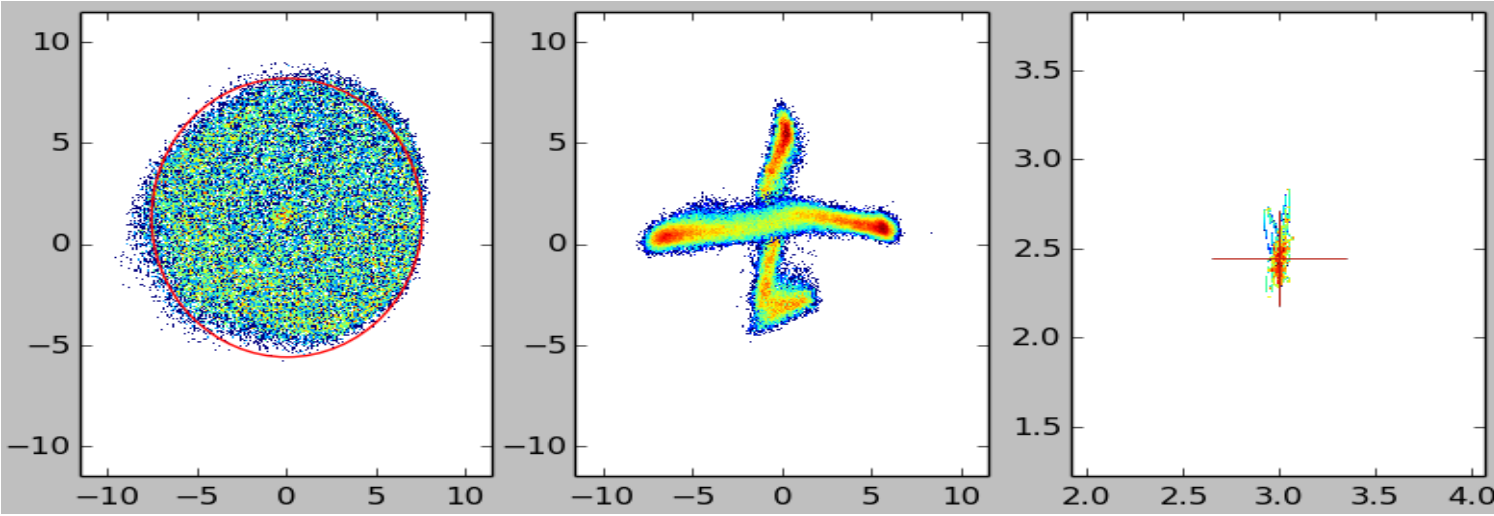
pos_sbpmabpmx {raw_bpmavail>0}



pos_sbpmabpmy {raw_bpmavail>0}



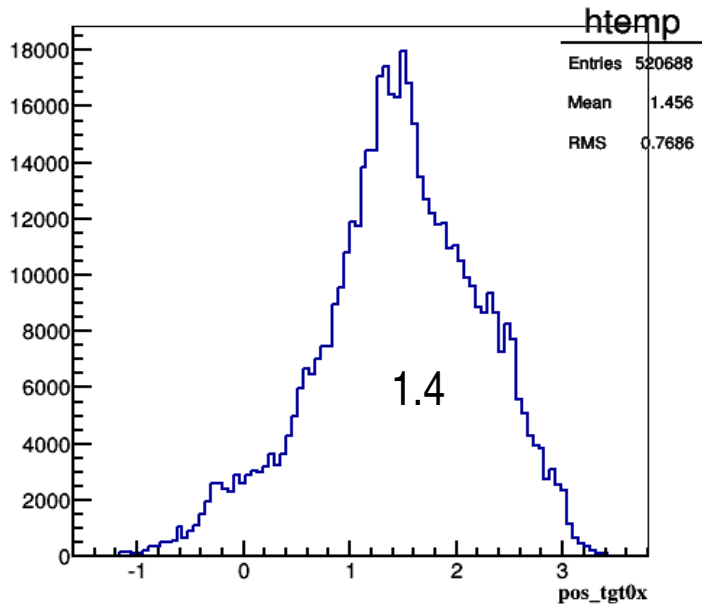
Use 3249(2) to calibrate c



Compare for three calibration constant:

3228

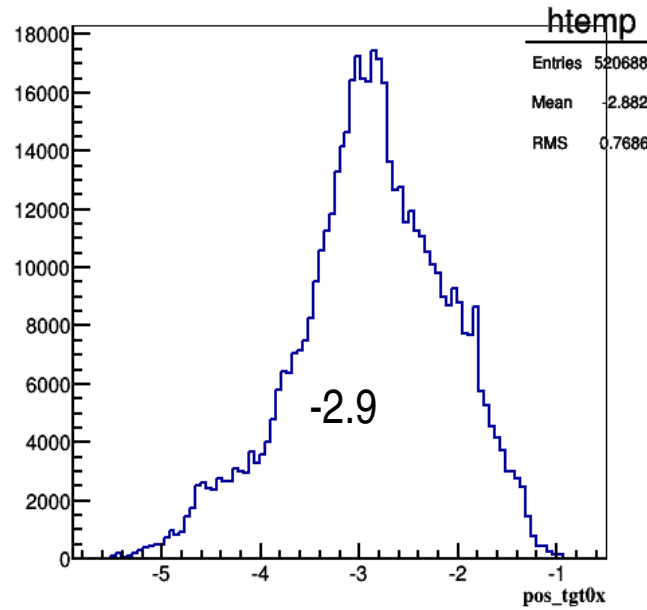
pos_tgt0x {raw_bpmavail>0.5}



bpmb x c,a,b:-1.45 1.464 0.315
 bpmb y c,a,b:-0.225 1.136 0.024

3235

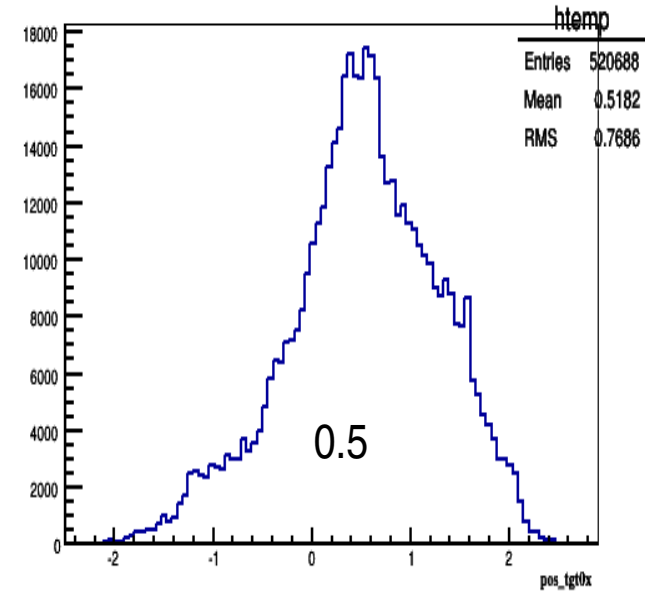
pos_tgt0x {raw_bpmavail>0.5}



bpmb x c,a,b:-1.564 1.464 0.315
 bpmb y c,a,b:1.824 1.136 0.024

3249

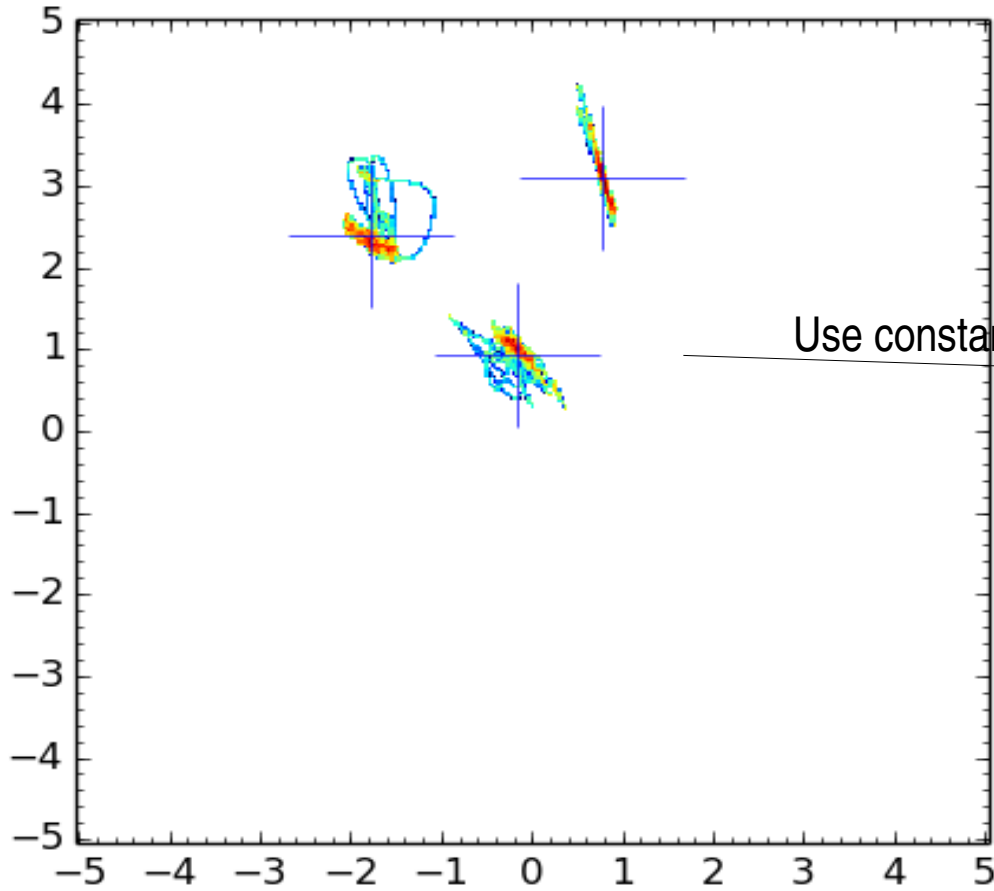
pos_tgt0x {raw_bpmavail>0.5}



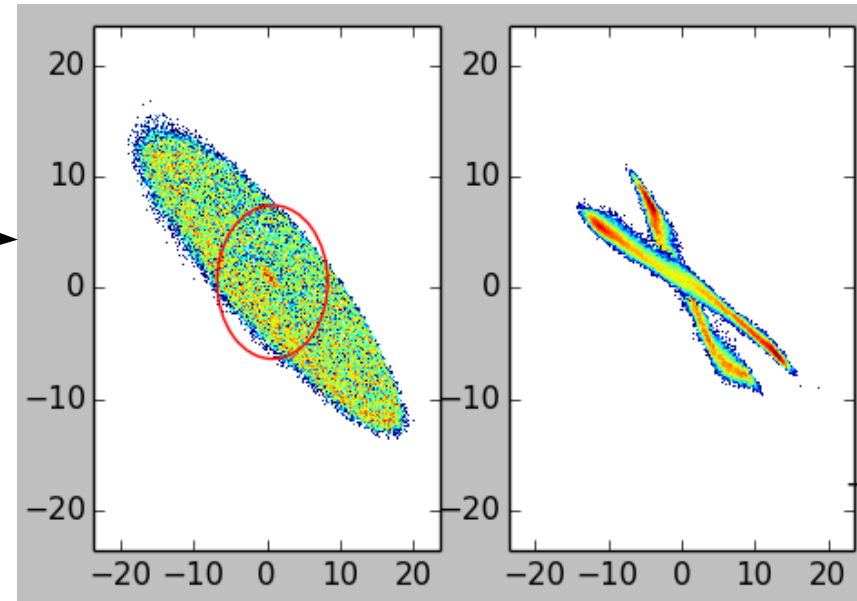
bpmb x c,a,b:-1.384 1.464 0.315
 bpmb y c,a,b:0.359 1.136 0.024

Use method : BPM A + harp05 → BPM B with three points

71nA,using bpmb_3228.dat



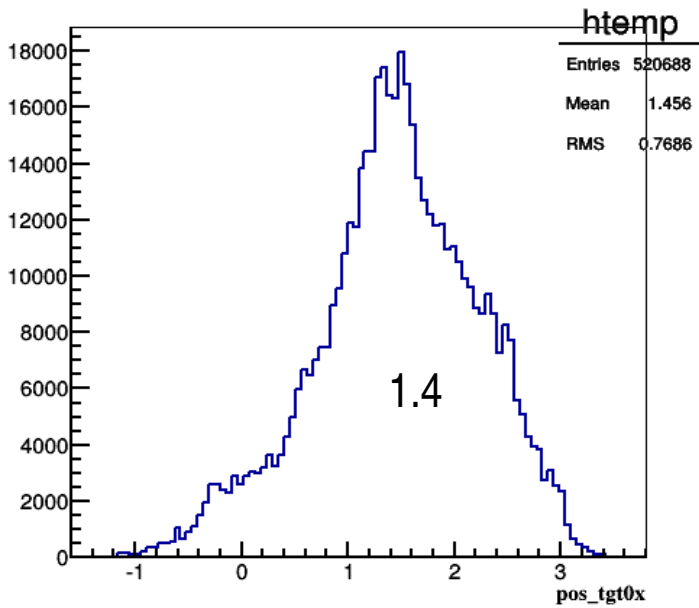
Use constant



bpmb x c,a,b:0.62 1.29 -0.61
bpmb y c,a,b:-2.13 3.16 -0.59

3228

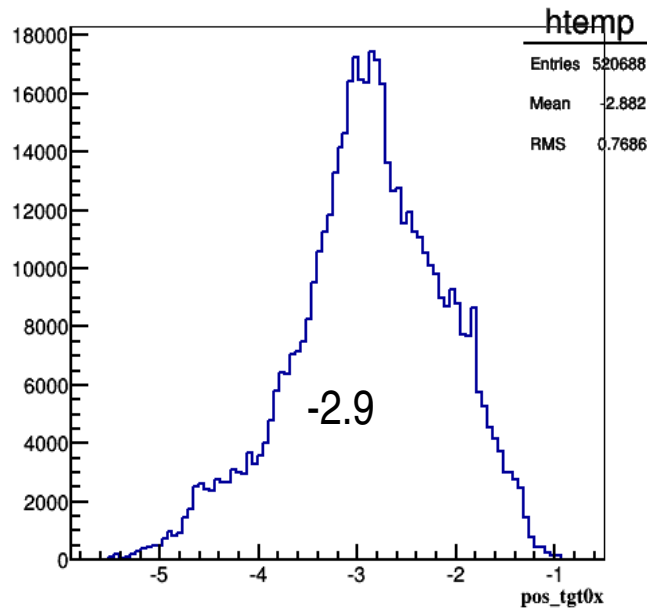
pos_tgt0x {raw_bpmavail>0.5}



bpmb x c,a,b:-1.45 1.464 0.315
 bpmb y c,a,b:-0.225 1.136 0.024

3235

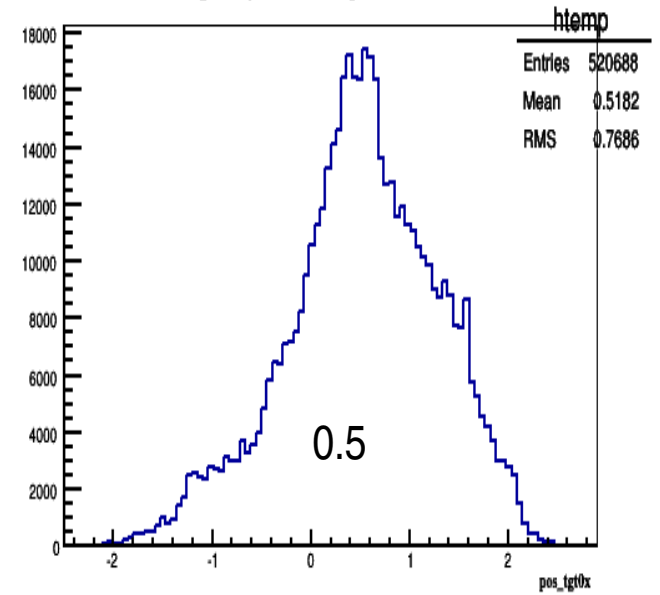
pos_tgt0x {raw_bpmavail>0.5}



bpmb x c,a,b:-1.564 1.464 0.315
 bpmb y c,a,b:1.824 1.136 0.024

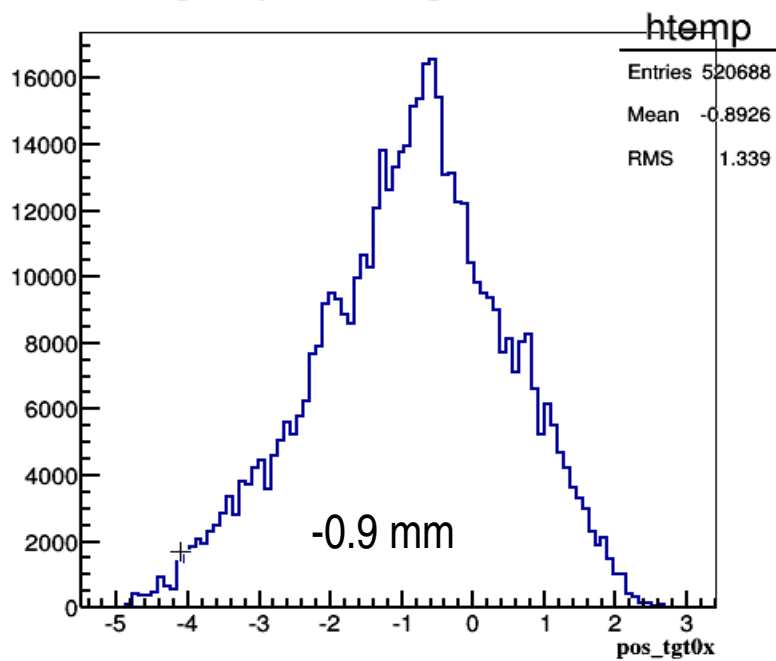
3249

pos_tgt0x {raw_bpmavail>0.5}



bpmb x c,a,b:-1.384 1.464 0.315
 bpmb y c,a,b:0.359 1.136 0.024

pos_tgt0x {raw_bpmavail>0.5}



$$X = c + ax + by$$

Use three harp positions

bpmb x c,a,b:0.62 1.29 -0.61
 bpmb y c,a,b:-2.13 3.16 -0.59

Need to continue...