

# 2016 Mollers Summary

Sebouh Paul

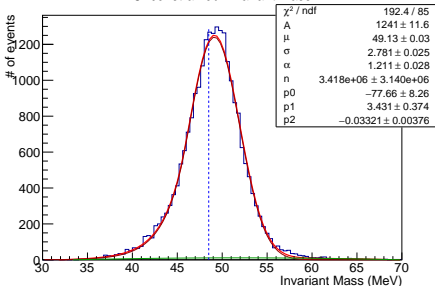
April 2, 2018

# Moller Cuts

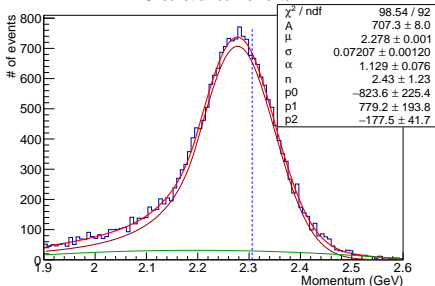
- ▶ Cuts
  - ▶ All flags good.
  - ▶ both track fit  $\chi^2/\text{d.o.f.} < 7$
  - ▶ both tracks  $p < 1.75$  GeV
  - ▶ track time difference  $< 3$  ns ( $\approx 3\sigma_{t\_track}$ )
  - ▶  $1.8$  GeV  $< p_{\text{sum}} < 2.9$  GeV
  - ▶ exactly one track matches to a cluster ( $n_\sigma < 7$ )
  - ▶ Vertex  $\chi^2 < 100$
  - ▶ Single 0 trigger

# Unconstrained Mollers

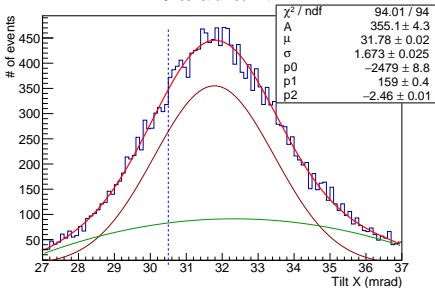
### Unconstrained Invariant Mass



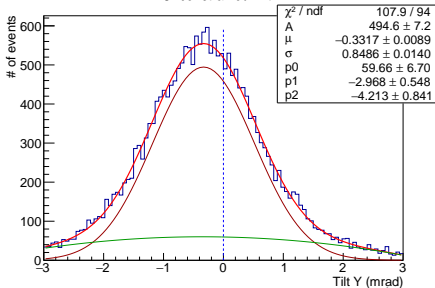
### Unconstrained Momentum



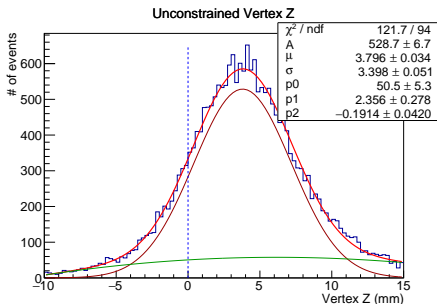
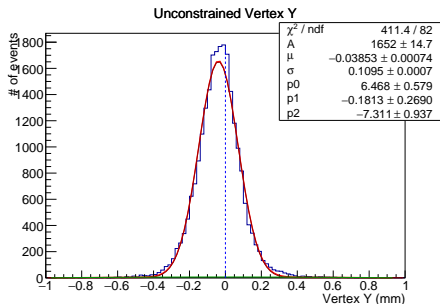
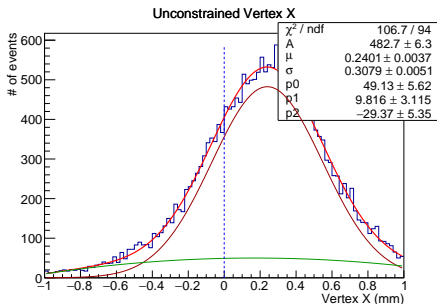
### Unconstrained Tilt X



### Unconstrained Tilt Y

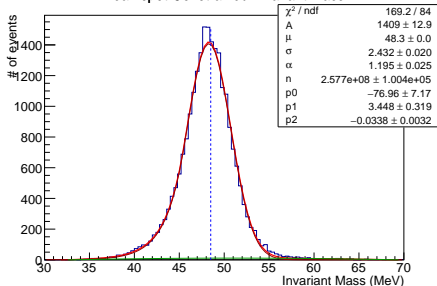


# Unconstrained Mollers

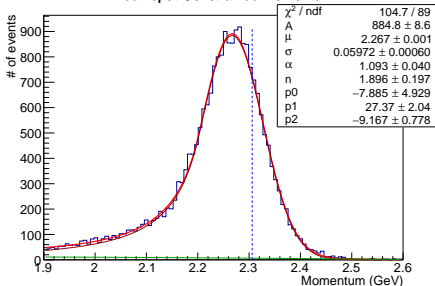


# Beamspot-Constrained Mollers

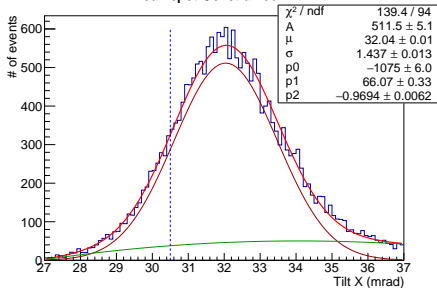
### Beamspot-Constrained Invariant Mass



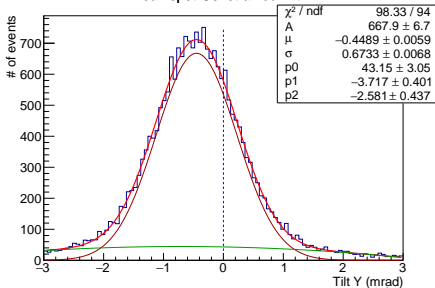
### Beamspot-Constrained Momentum



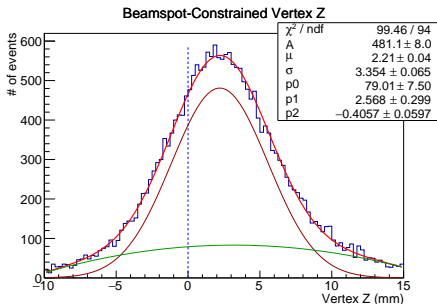
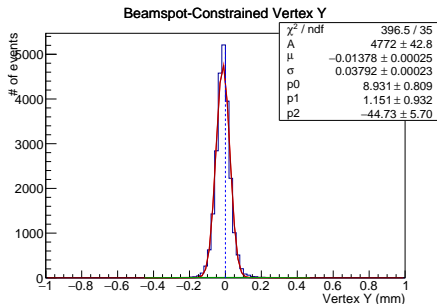
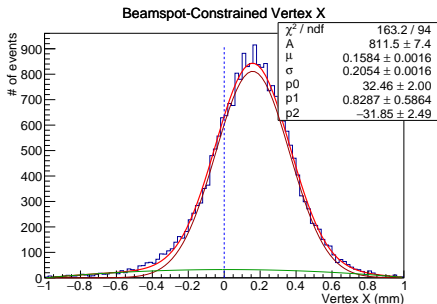
### Beamspot-Constrained Tilt X



### Beamspot-Constrained Tilt Y

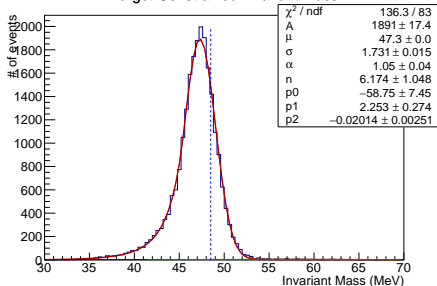


# Beamspot-Constrained Mollers

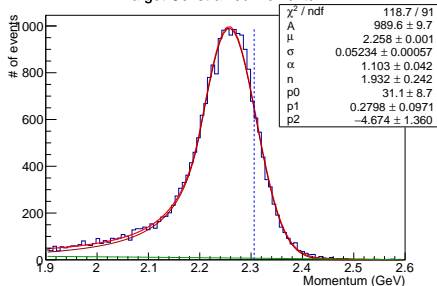


# Target-Constrained Mollers

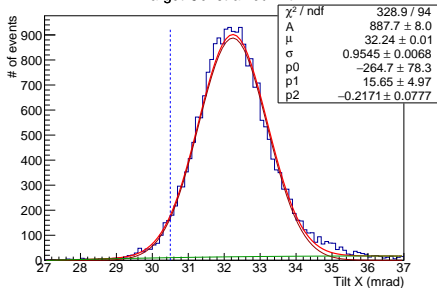
## Target-Constrained Invariant Mass



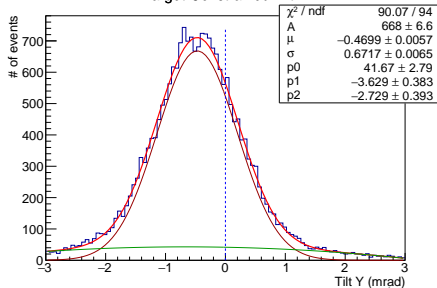
## Target-Constrained Momentum



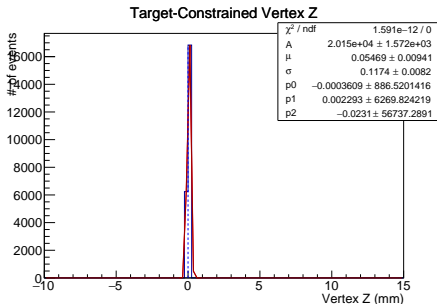
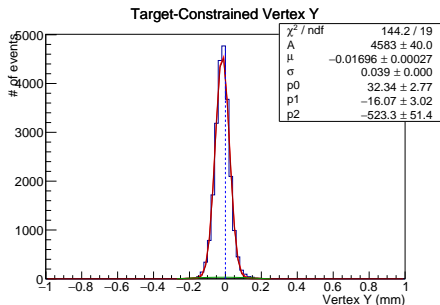
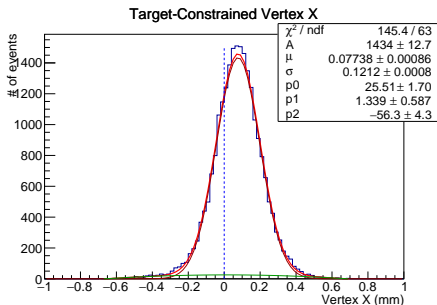
## Target-Constrained Tilt X



## Target-Constrained Tilt Y



# Target-Constrained Mollers





## Summary Table

|                 | Unconstrained |      | Beamspot |      | Target |      |
|-----------------|---------------|------|----------|------|--------|------|
| Momentum (GeV)  | 2.28          | 0.07 | 2.27     | 0.06 | 2.26   | 0.05 |
| Inv. Mass (MeV) | 49.13         | 2.78 | 48.30    | 2.43 | 47.30  | 1.73 |
| Tilt X (mrad)   | 31.78         | 1.67 | 32.04    | 1.44 | 32.24  | 0.95 |
| Tilt Y (mrad)   | -0.33         | 0.85 | -0.45    | 0.67 | -0.47  | 0.67 |
| Vertex X (mm)   | 0.24          | 0.31 | 0.16     | 0.21 | 0.08   | 0.12 |
| Vertex Y (mm)   | -0.04         | 0.11 | -0.01    | 0.04 | -0.02  | 0.04 |
| Vertex Z (mm)   | 3.80          | 3.40 | 2.21     | 3.35 | 0.05   | 0.12 |