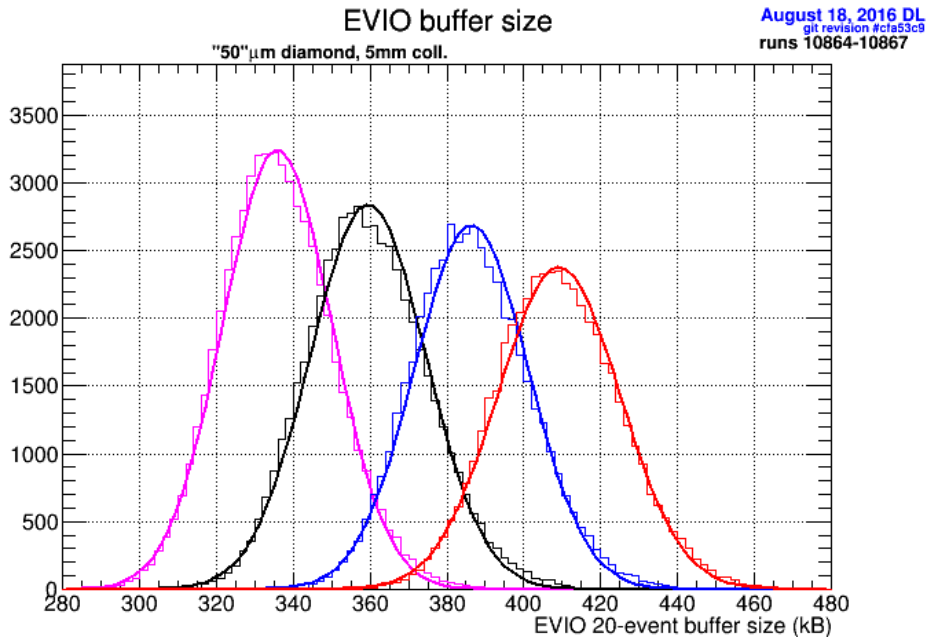
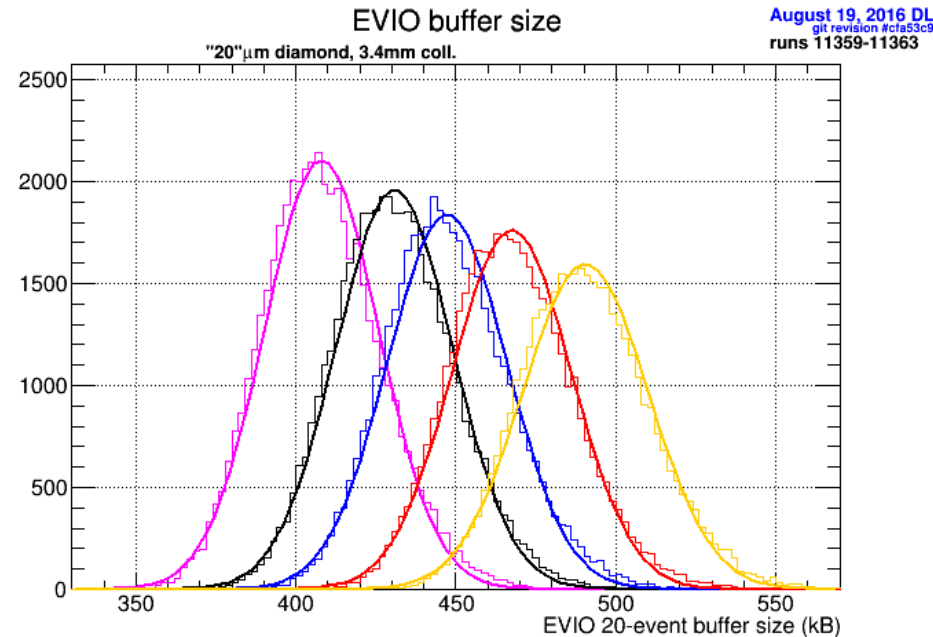


- Plot on left for runs 10864-10867 has been shown previously
- Plot on right for runs 11359-11363 is new
  - These overlap a lot in beam intensity as shown on next slide

50 $\mu$ m, 5mm collimator

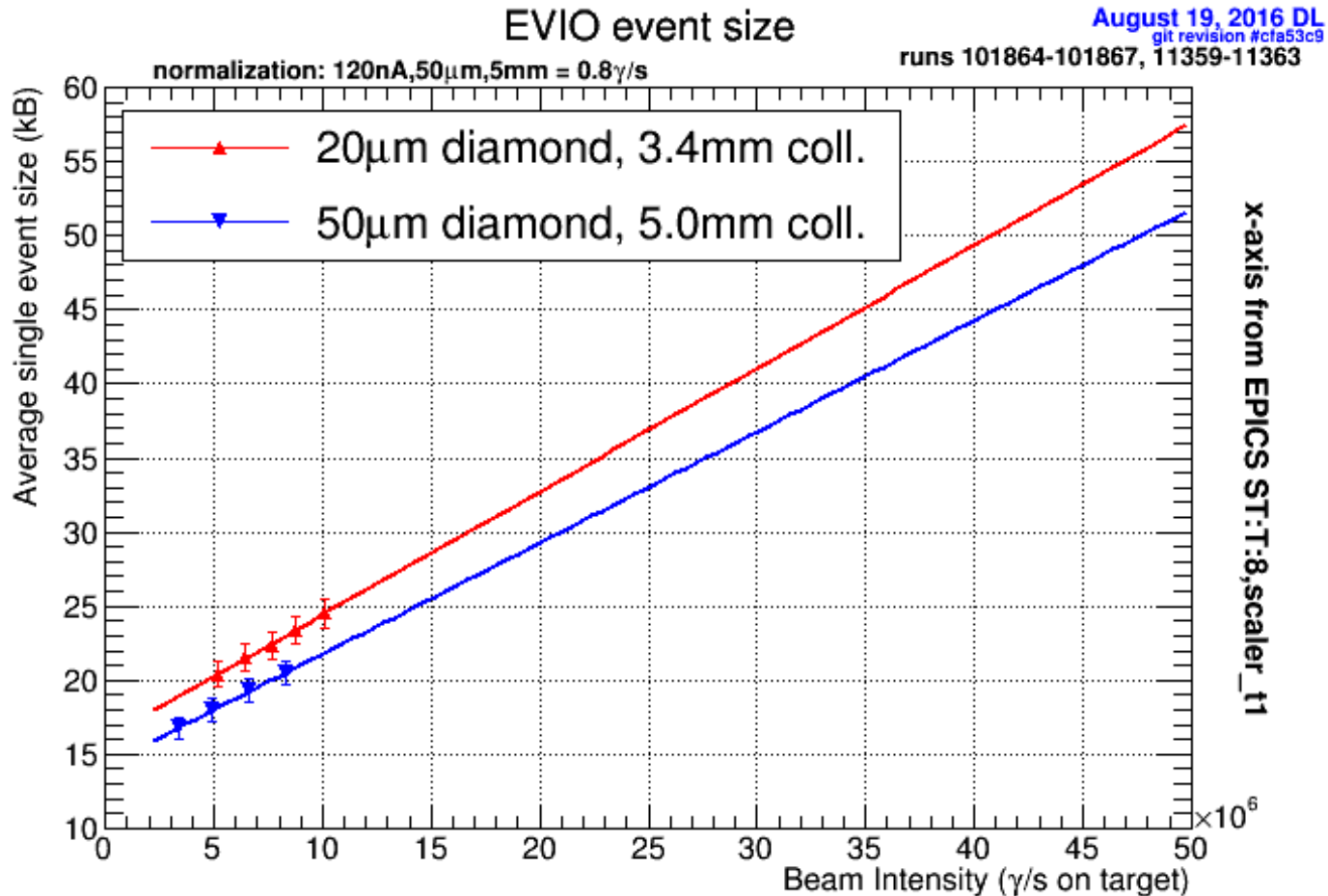


20 $\mu$ m, 3.4mm collimator



# Extrapolating total event size (from fits on previous slide) to high luminosity

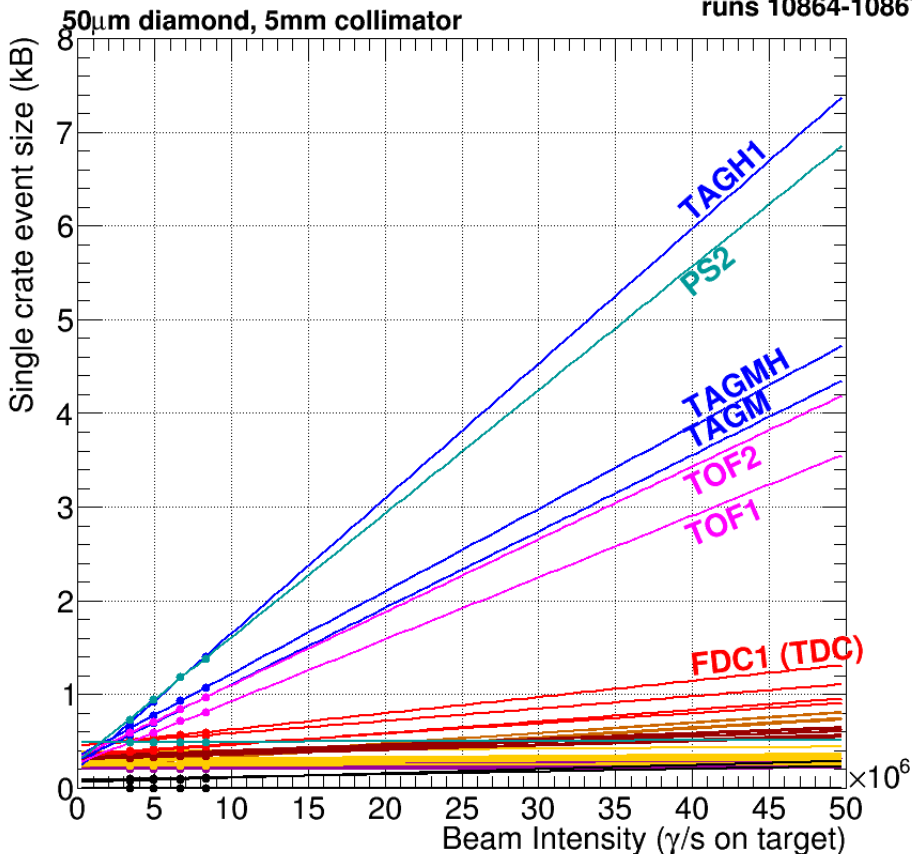
- For each run, a Start Counter scaler value from EPICS was used to calculate beam intensity.
- The normalization point was taken from run 10864 (125nA, 50 $\mu$ m, 5mm)
  - Assumed 120nA, 50 $\mu$ m, 5mm corresponds to  $0.8 \times 10^7$   $\gamma$ /s
- If we assume 100kHz L1 trigger rate at high intensity, then this would indicate 5-6 GB/s (*more details next slide*)



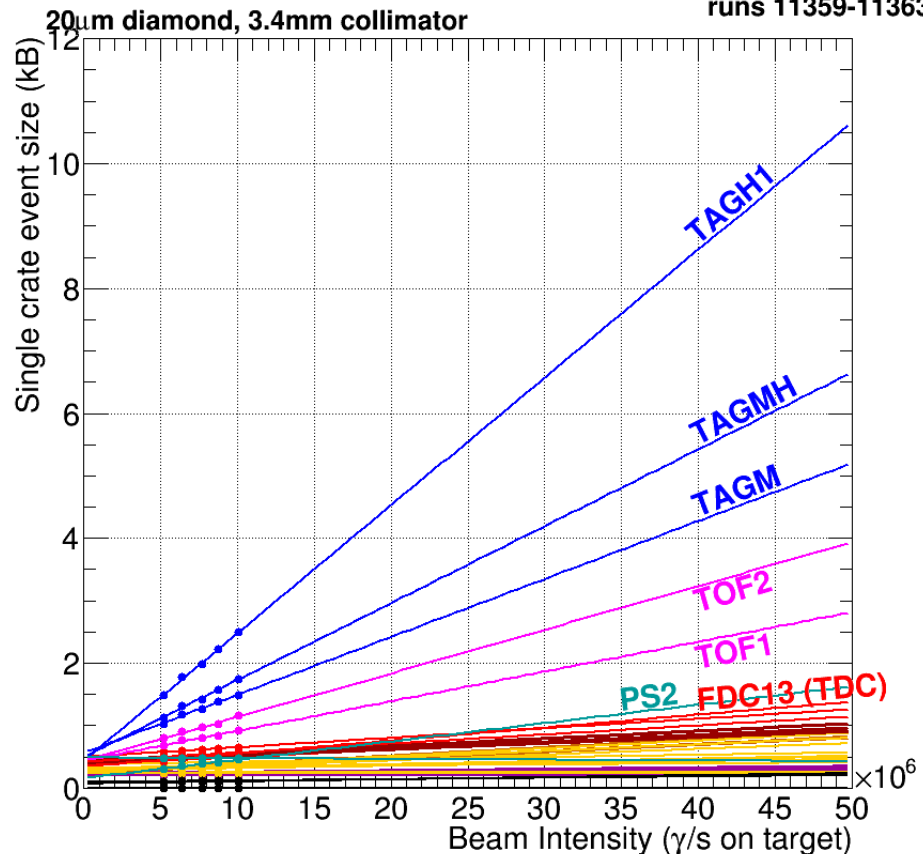
- These plots extrapolate the single crate, single event size to high luminosity
- Same technique described on previous slide for calculating beam intensity
- Assuming 100kHz L1 trigger for high intensity, 20 $\mu$ m data suggests  $\sim$ 150MB/s for FDC F1TDC crate

*n.b. L3 review presentation assumed L1 event rate would scale from 30kHz and thus, high intensity would correspond to  $\sim$ 190kHz. If we are able to tighten L1 trigger so that high intensity is only 100kHz then the FDC crates will be just inside of the VME hardware limit.*

Single Crate Projection August 19, 2016 DL  
git revision #cfa53c9  
runs 10864-10867



Single Crate Projection August 19, 2016 DL  
git revision #cfa53c9  
runs 11359-11363

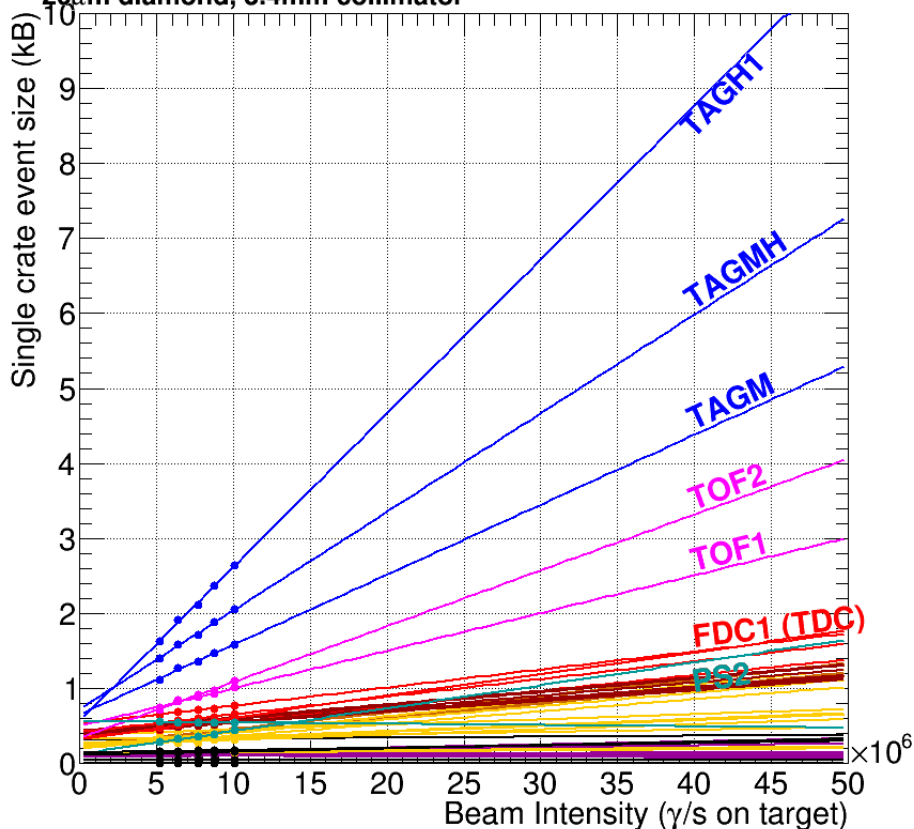


- These plots extrapolate the single crate, single event size to high luminosity
- Same technique described on previous slide for calculating beam intensity
- Assuming 100kHz L1 trigger for high intensity, 20 $\mu$ m data suggests  $\sim$ 150MB/s for FDC F1TDC crate

*n.b. L3 review presentation assumed L1 event rate would scale from 30kHz and thus, high intensity would correspond to  $\sim$ 190kHz. If we are able to tighten L1 trigger so that high intensity is only 100kHz then the FDC crates will be just inside of the VME hardware limit.*

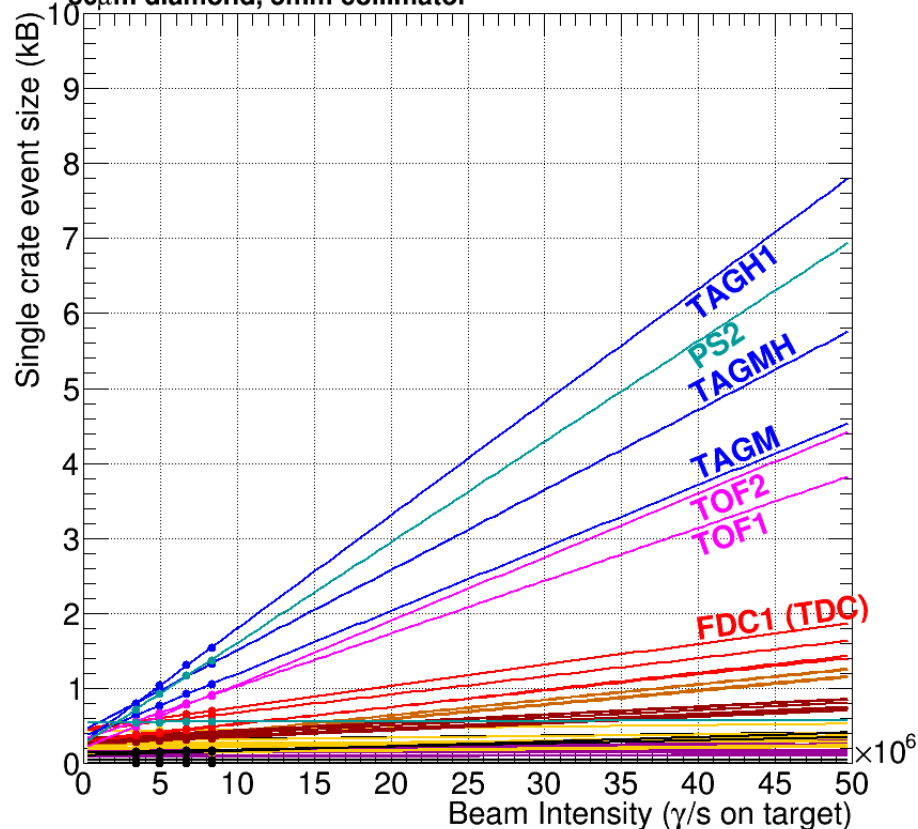
Single Crate Projection August 26, 2016 DL  
git revision #31bf3da  
runs 11359-11363

20 $\mu$ m diamond, 3.4mm collimator

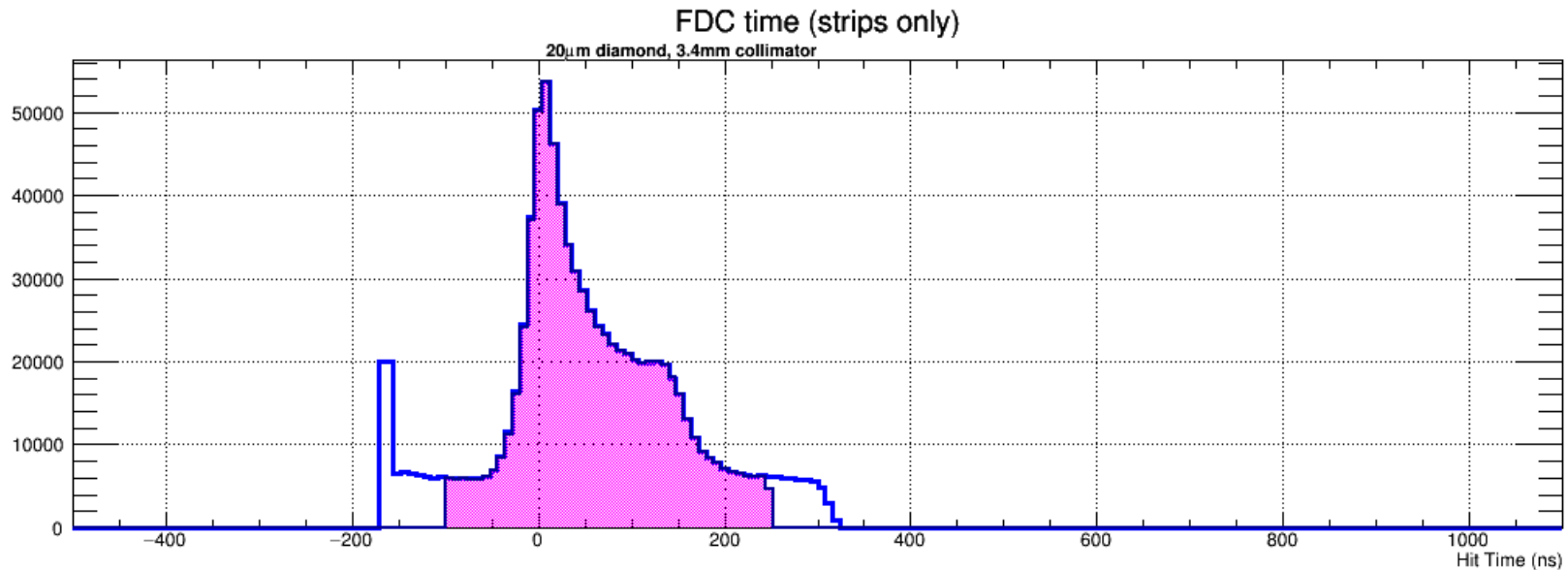


Single Crate Projection August 26, 2016 DL  
git revision #31bf3da  
runs 10864-10867

50 $\mu$ m diamond, 5mm collimator

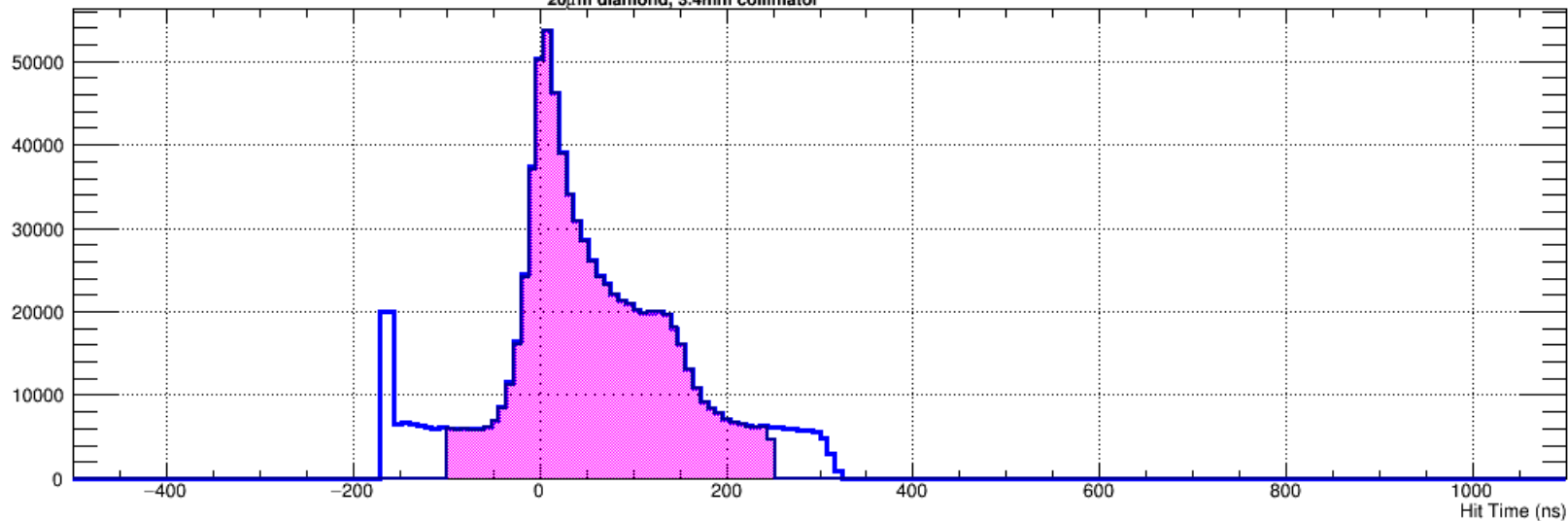


- Individual hits were excluded when writing out disentangled events to a new EVIO file
- Cut was made on fully calibrated times, referring back to digitized hit that created it
- Plot below and on following pages shows two histograms:
  - Blue outline is from EVIO file with all hits
  - Magenta filled is from disentangled EVIO file with hits cut



### FDC time (strips only)

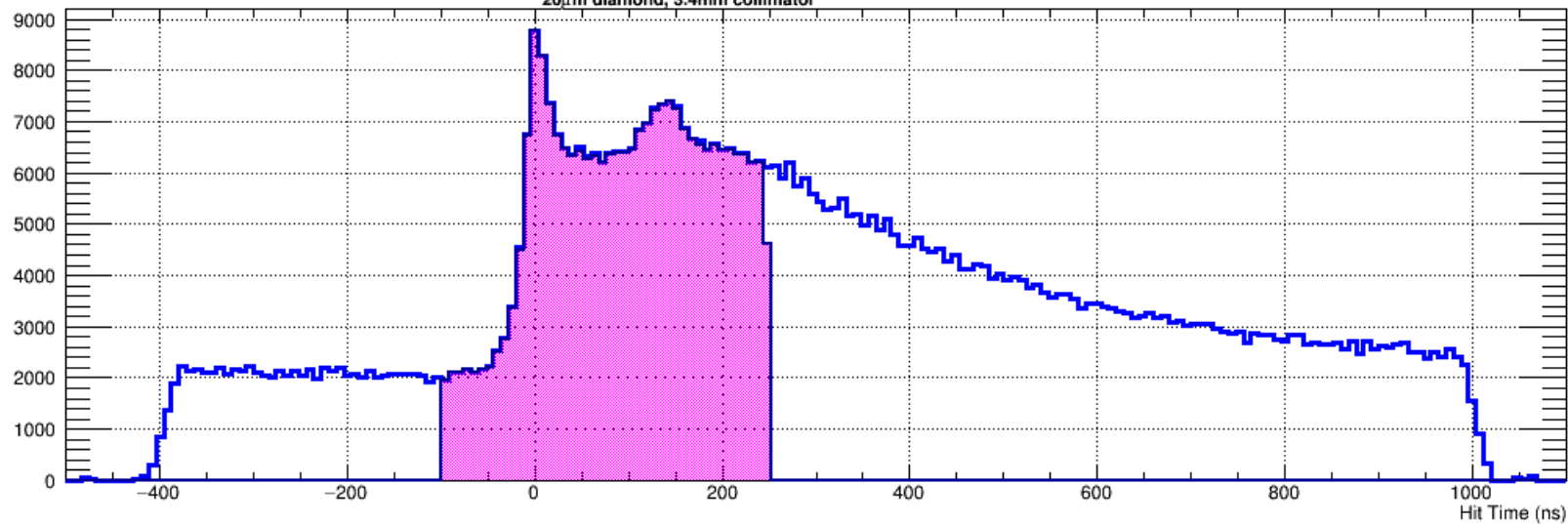
20 $\mu$ m diamond, 3.4mm collimator



August 26, 2016 DL  
git revision #31bf3da  
runs 11359-11363

### FDC time (wires only)

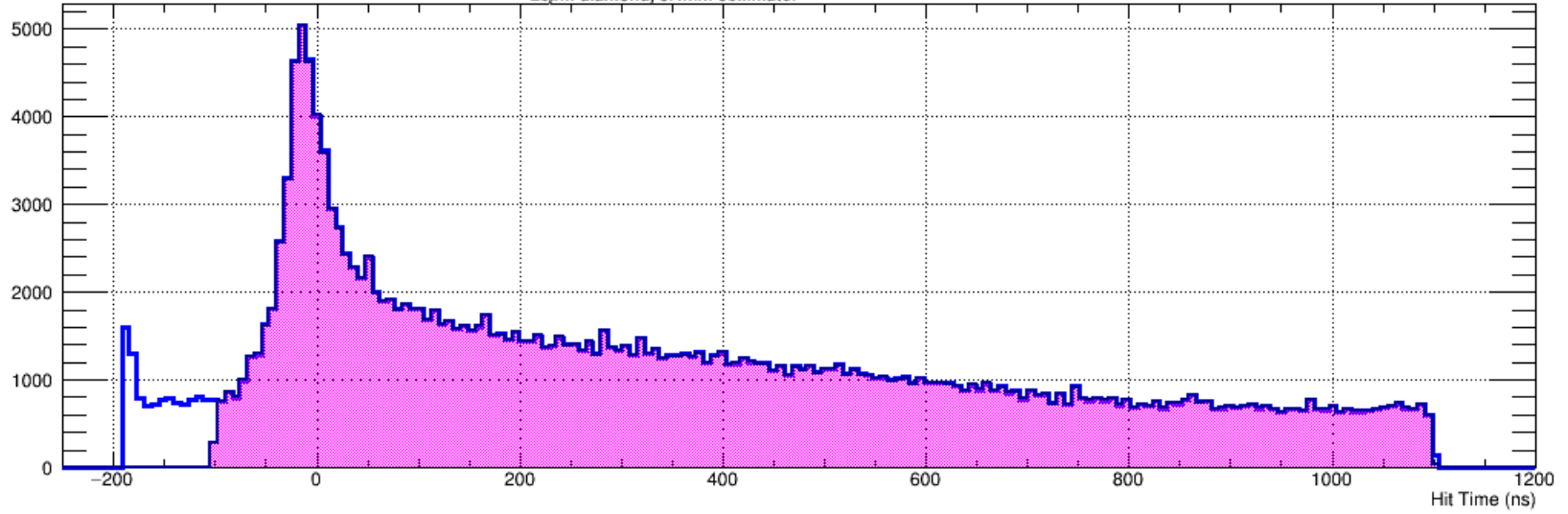
20 $\mu$ m diamond, 3.4mm collimator



August 26, 2016 DL  
git revision #31bf3da  
runs 11359-11363

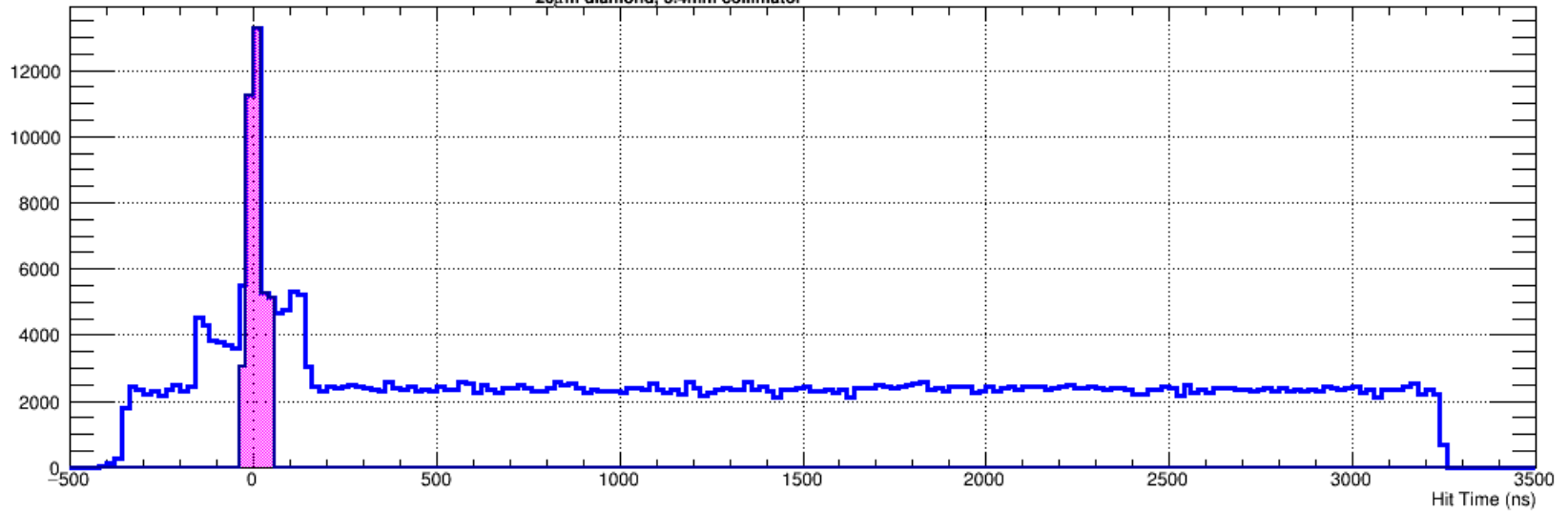
### CDC time

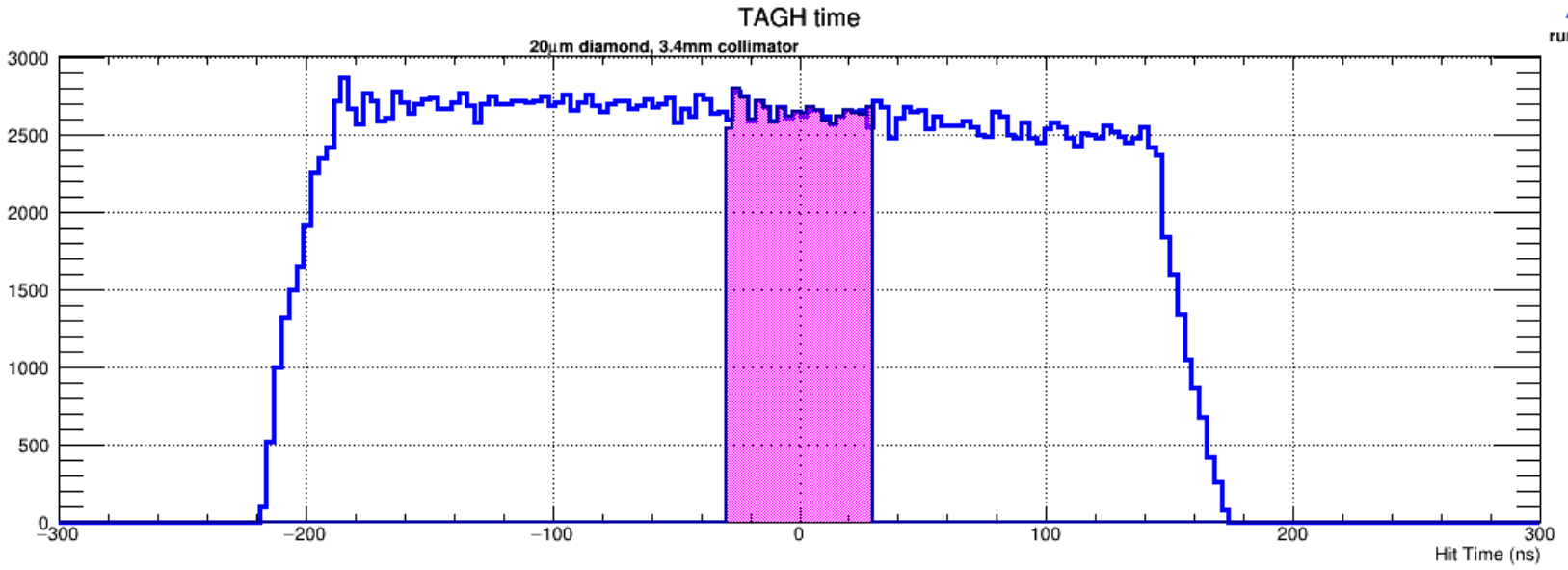
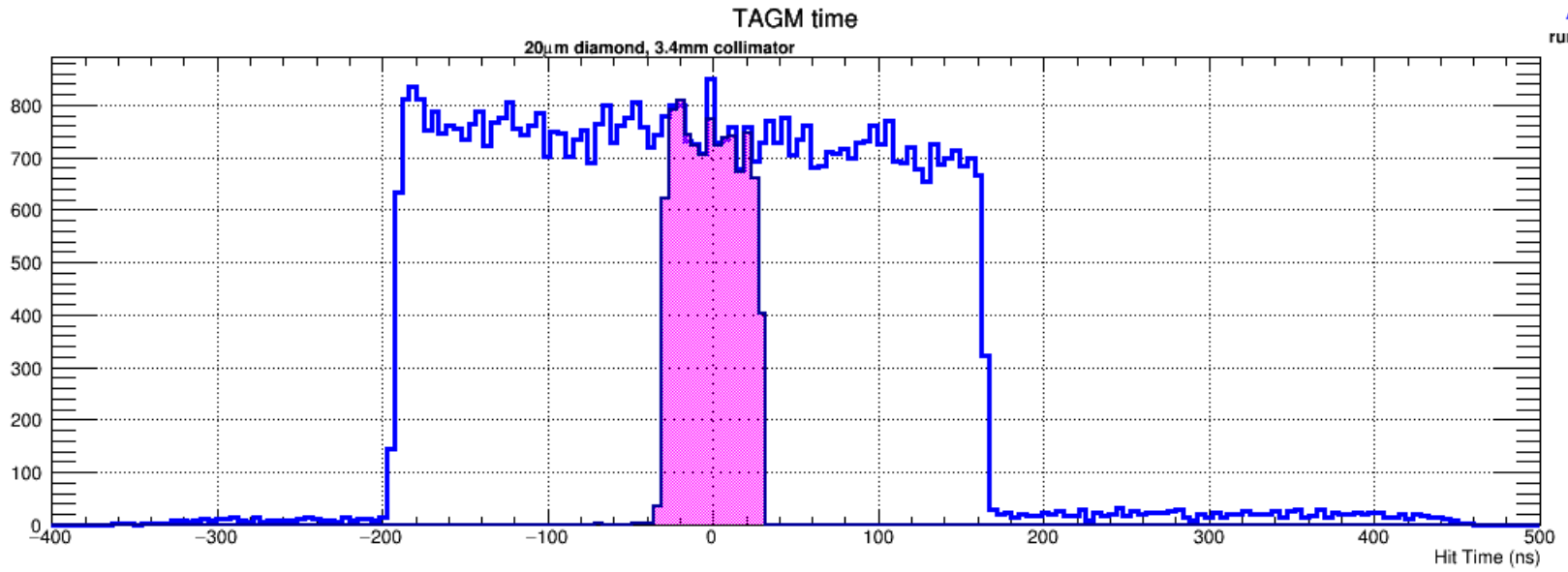
20  $\mu$ m diamond, 3.4mm collimator



### TOF time

20  $\mu$ m diamond, 3.4mm collimator

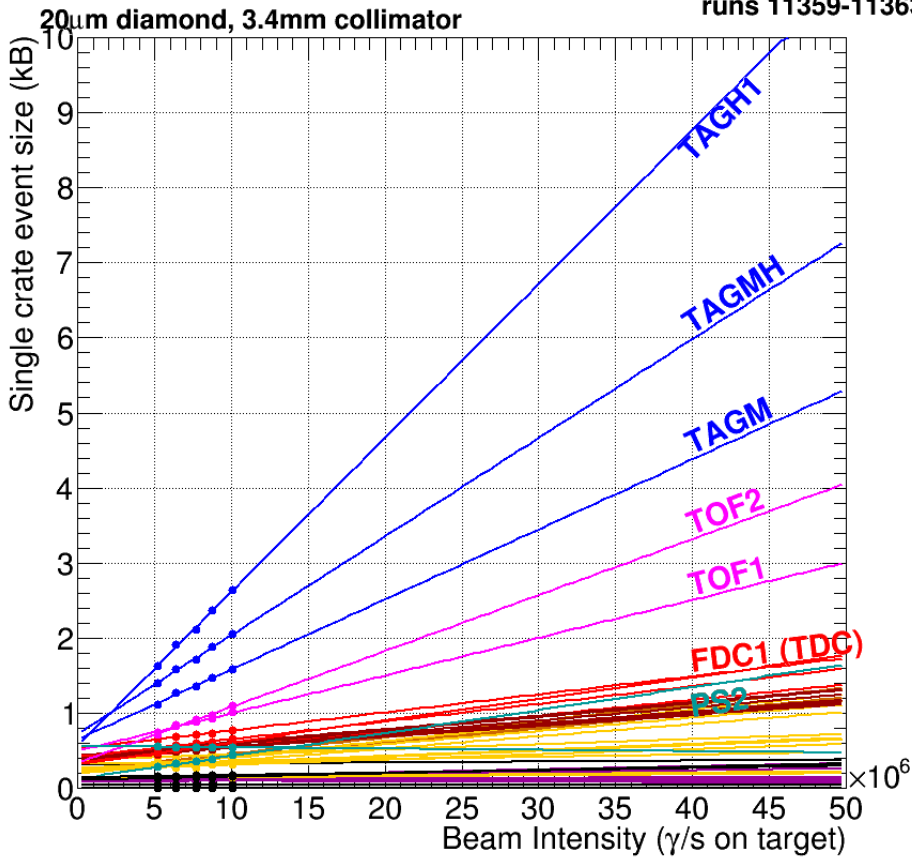




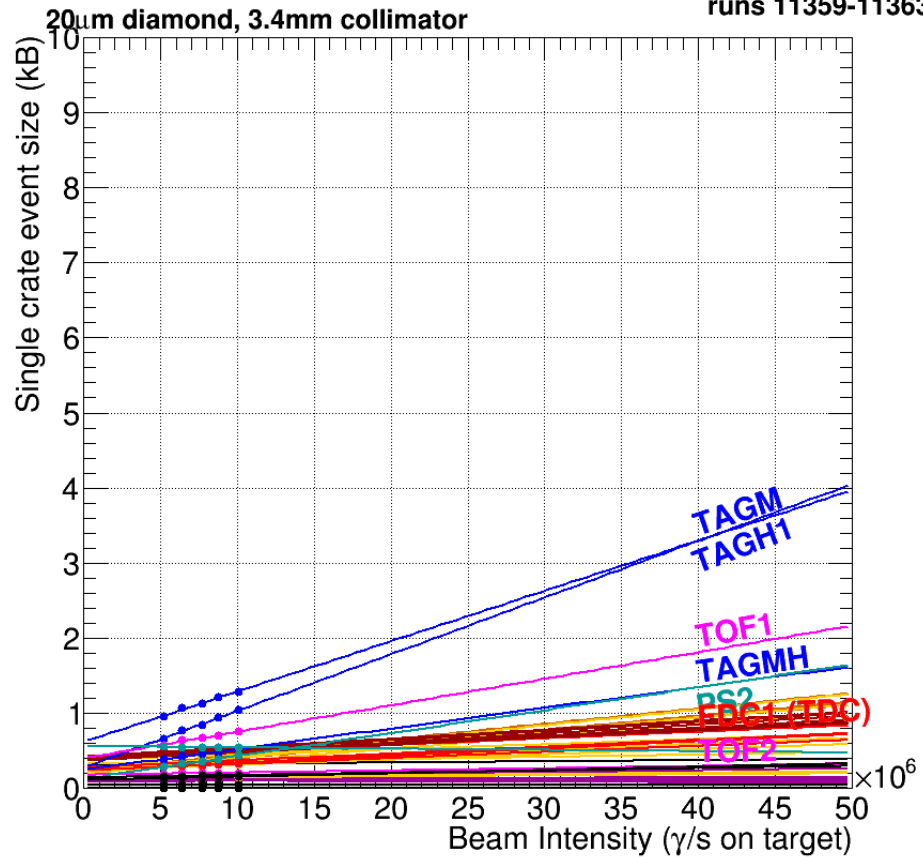


# 20 $\mu$ m, 3.4mm

Single Crate Projection August 26, 2016 DL  
git revision #31bf3da  
runs 11359-11363

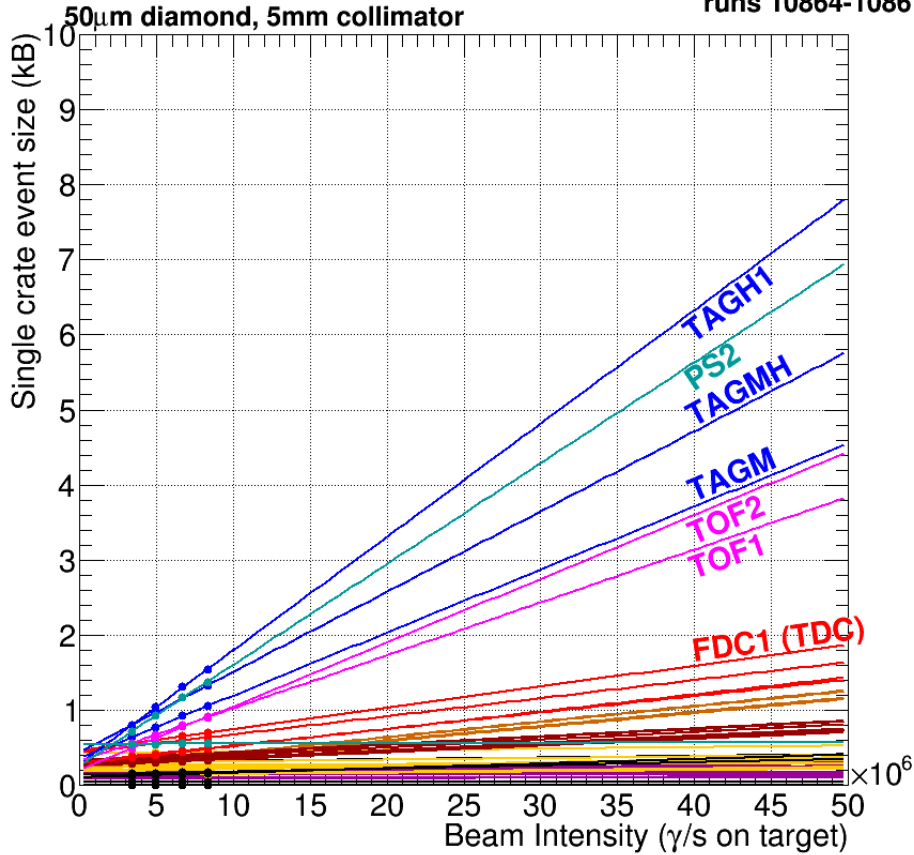


Single Crate Projection August 26, 2016 DL  
git revision #31bf3da  
runs 11359-11363

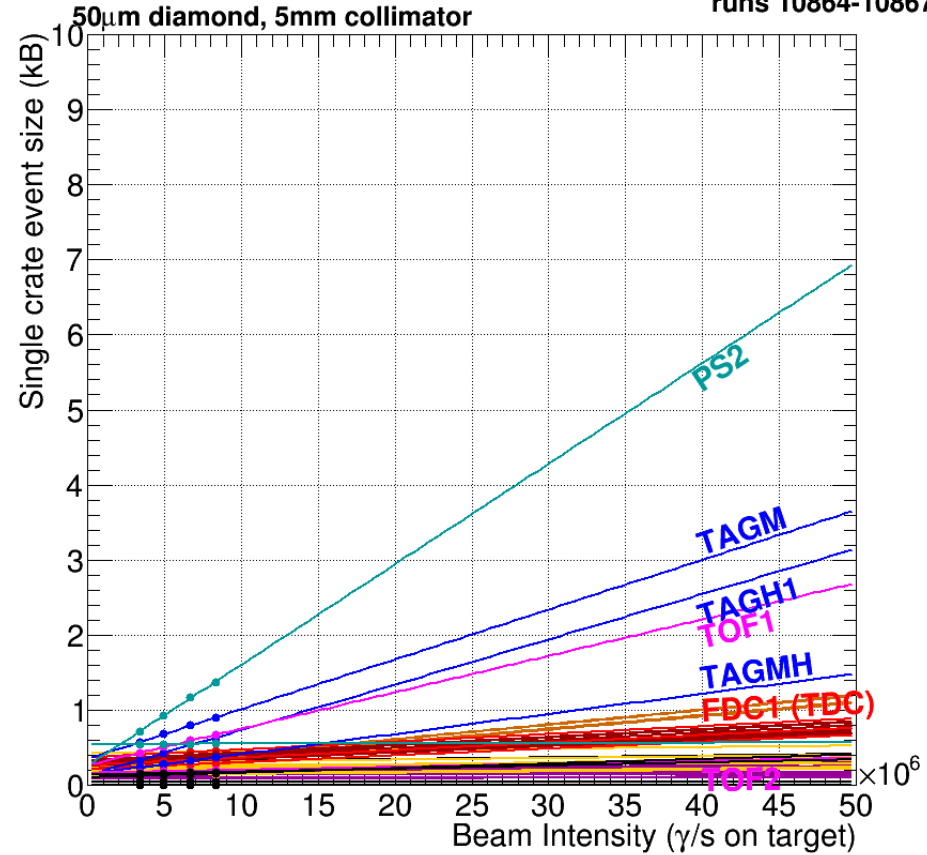


# 50 $\mu$ m, 5mm

Single Crate Projection August 26, 2016 DL  
git revision #31bf3da  
runs 10864-10867



Single Crate Projection August 26, 2016 DL  
git revision #31bf3da  
runs 10864-10867



- Working on extracting L1 trigger rate from time between events
- Dropping events based on stricter L1 trigger thresholds would allow estimate of L1 trigger rate with these existing data files

