A couple of test items

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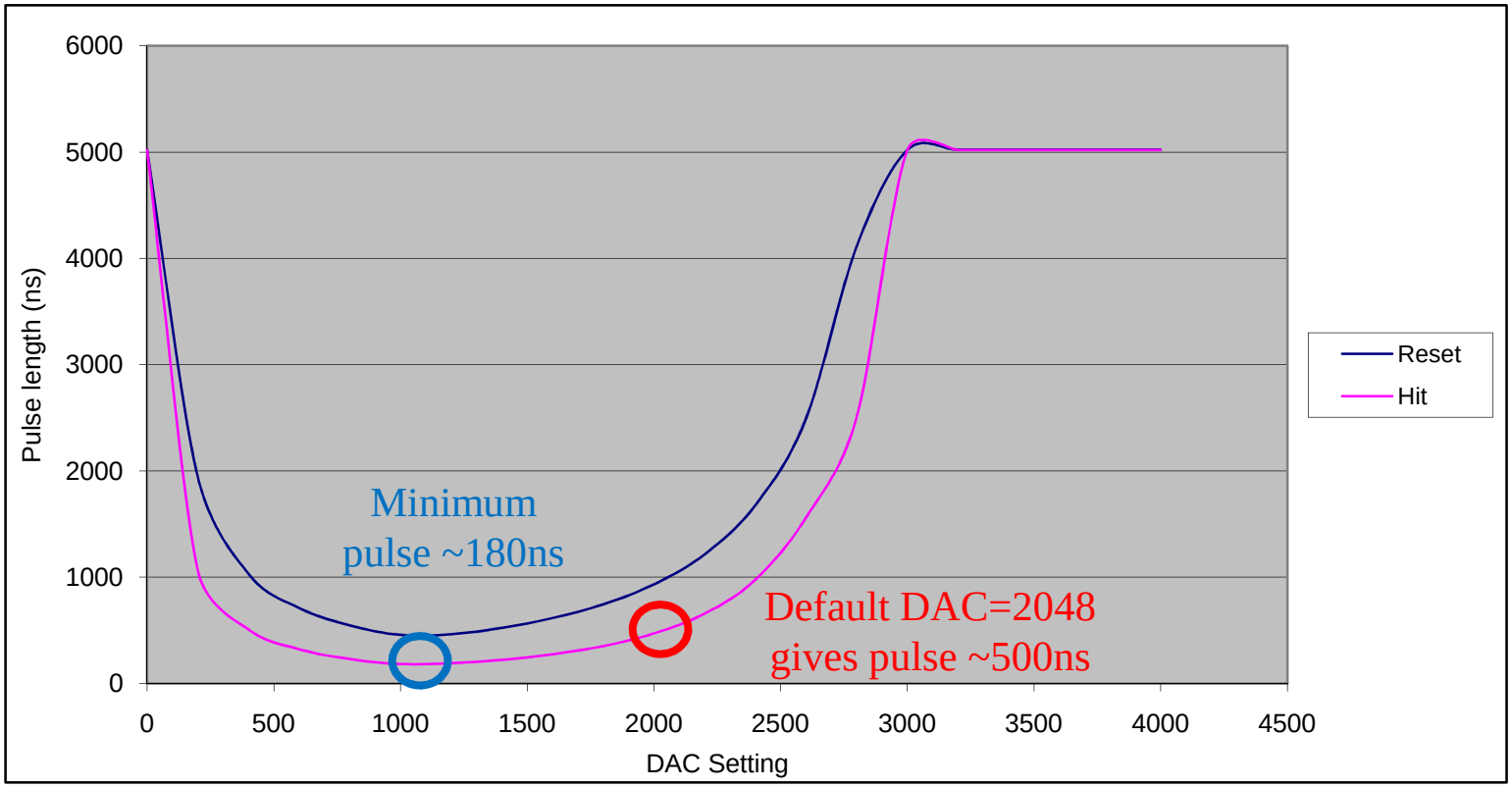
Monostable lengths

- Hits above threshold should give fixed length output pulse
  - Given by monostable, common design to shapers and samplers
  - Length of output pulse controlled by bias settings from DACs on Vladimir's PCB
  - I12_MSOBIAS1 and I34_MSOBIAS1 for shapers and samplers respectively
  - Samplers also have reset monostable, which needs to be longer than the hit monostable; I34_MSOBIAS2
  - Ideally monostable hit length ~1.1 of BX period; balance efficiency against memory use
- Looked into the monostables in the bulk
  - Thought they might be the cause of some of oddities seen by Jamie B

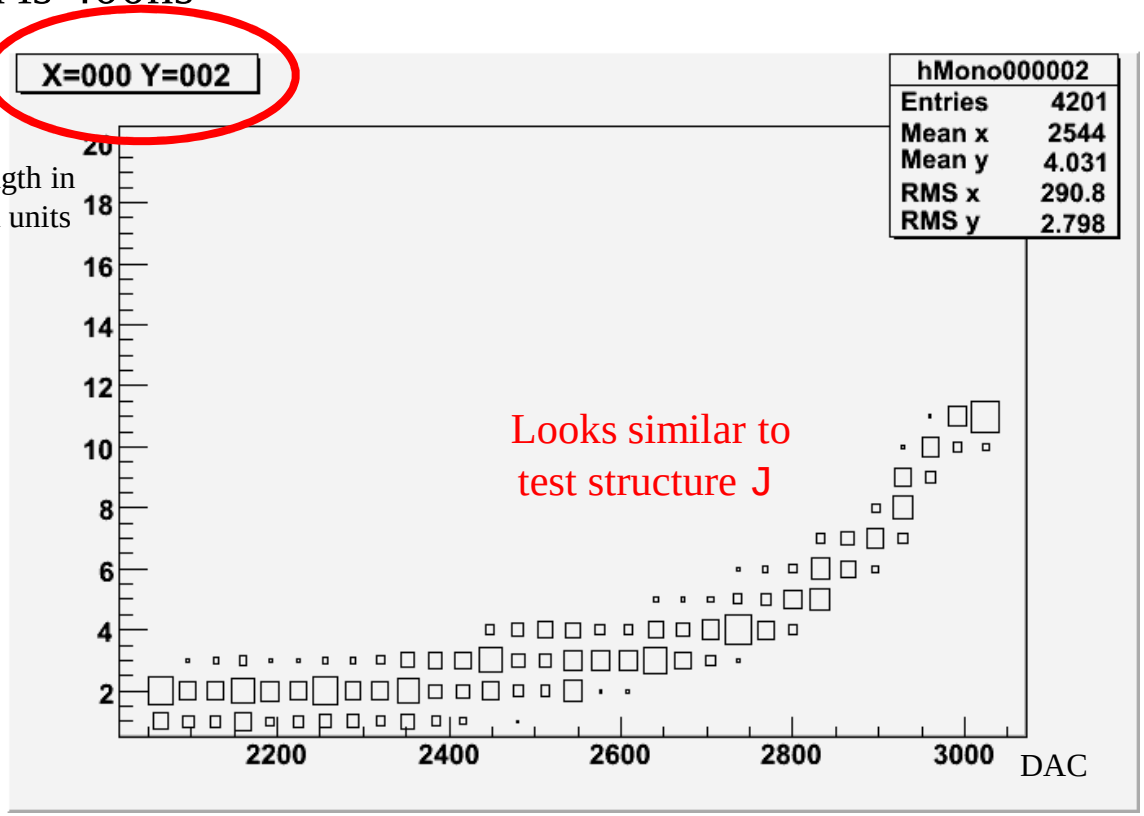
Monostables on test structures

- Jamie C measured monostable hit output on test structure
  - Controlled by separate DACs
- Can see the length directly on a scope



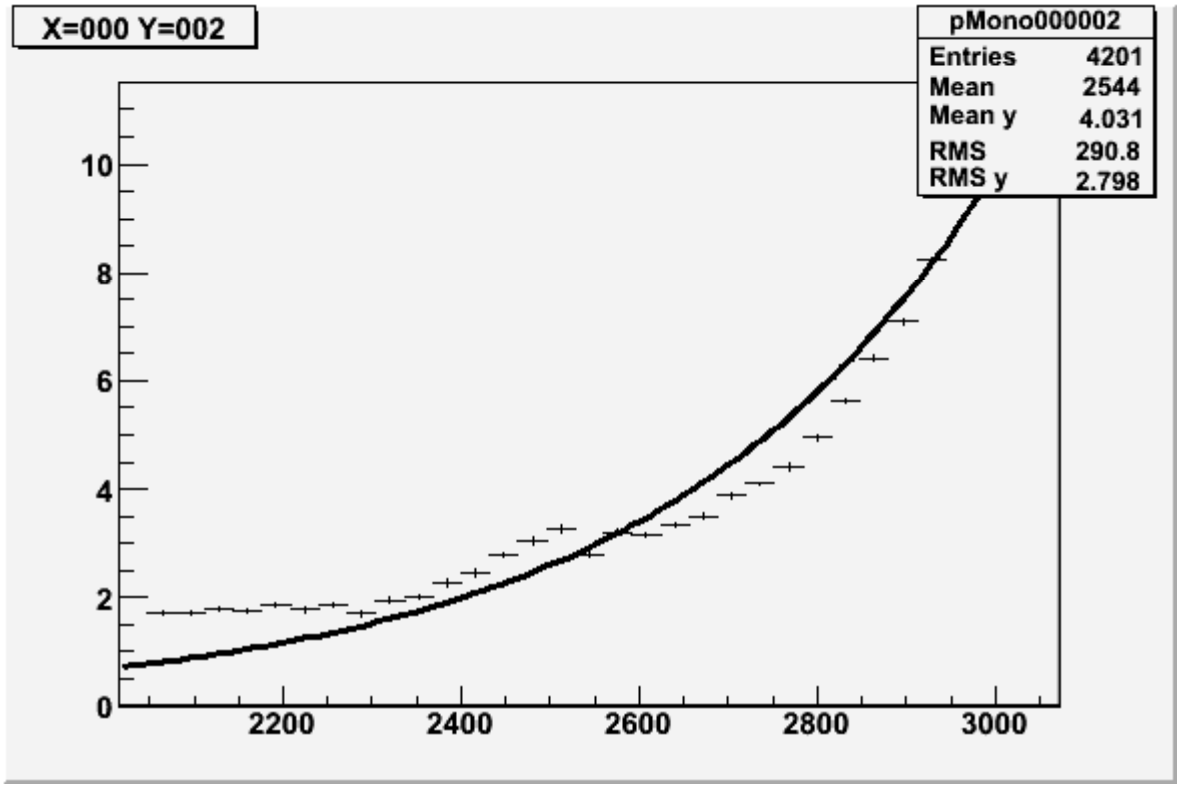
Monostables on bulk pixels

- Cannot measure directly; can only see hits in memory
  - Count consecutive timestamps to measure “BX length” of hit for every channel
  - Current firmware BX frequency is 2.5MHz (i.e. 40MHz/16) so BX period is 400ns



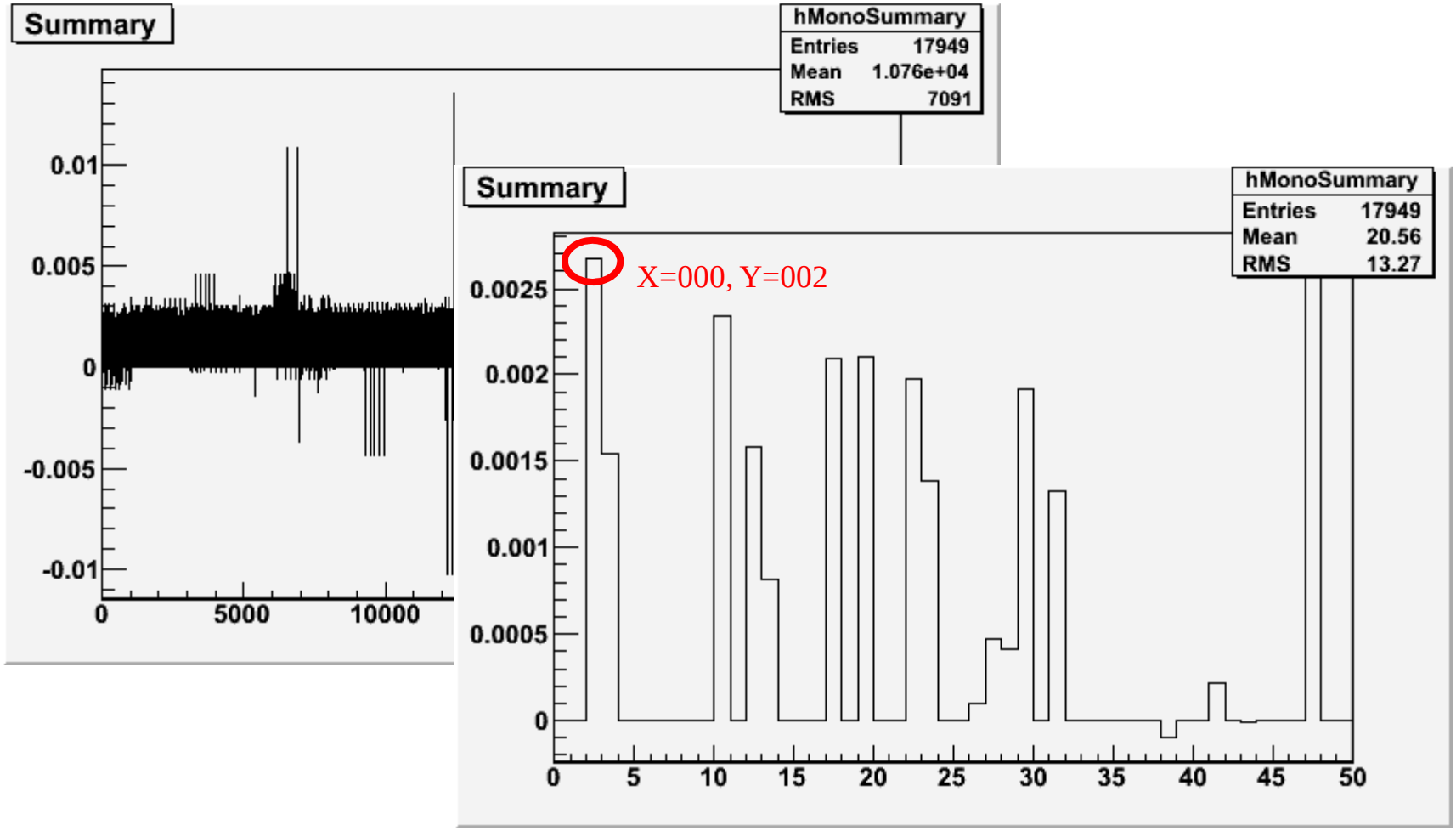
Characterise slope

- Do rough fit to exponential of profile histogram
  - Not “good” fit but robust

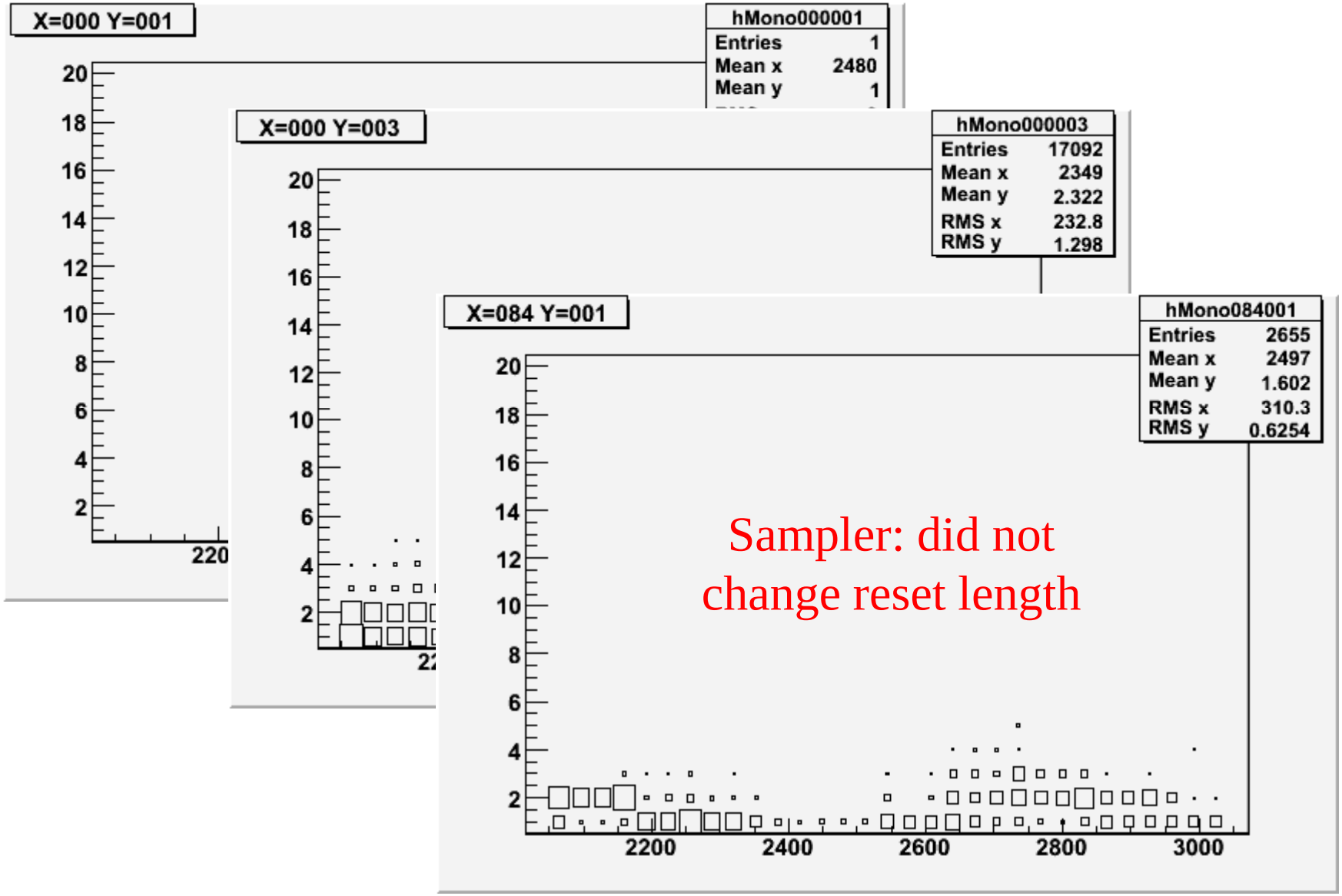


Uniformity is not good

- Plot exponential slope vs pixel location: 168*x+y
  - Shapers are < 14112, samplers the rest

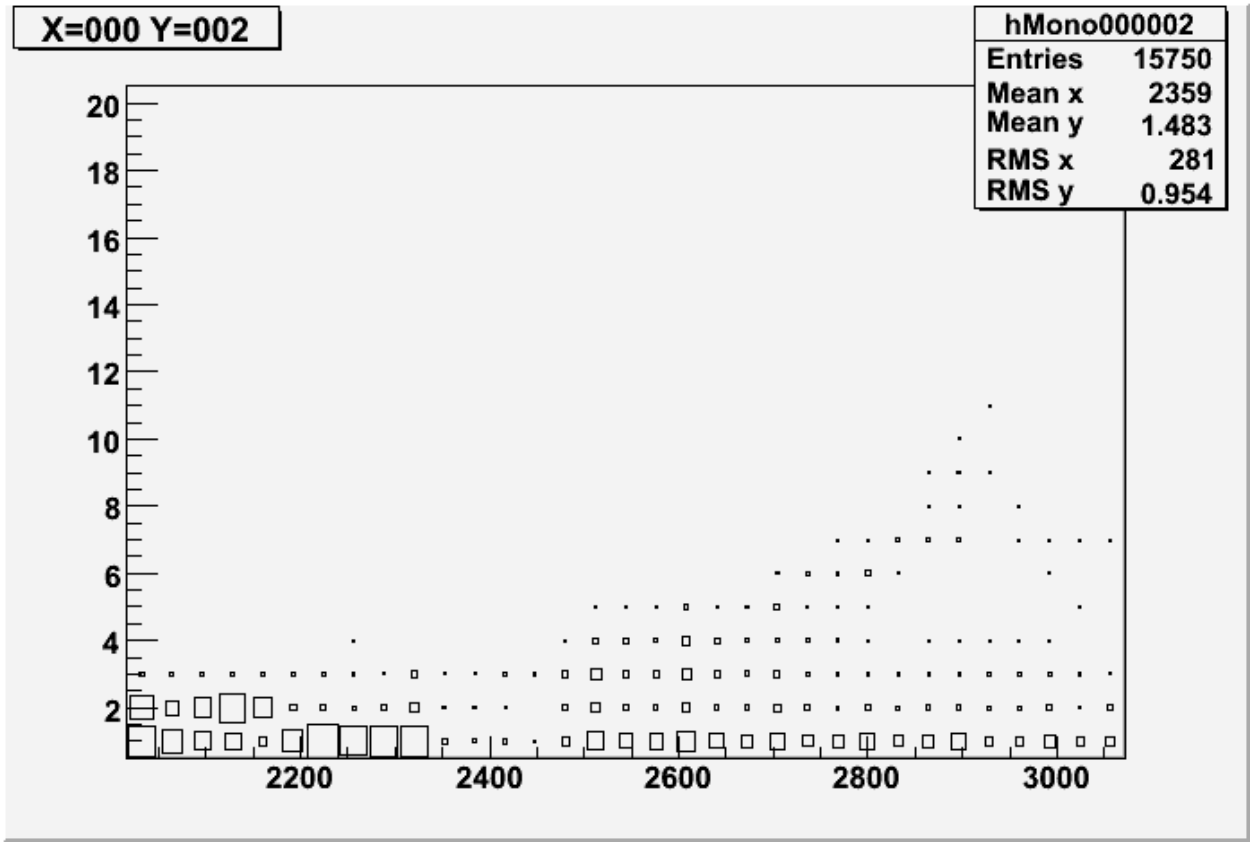


Other pixels



Reproduce at Imperial?

- Rerun with lower threshold and changing sampler resets
- Currently cannot get same result
  - Even for good pixel



DAQ speed

- Limited by data rate from sensor