

TPAC progress

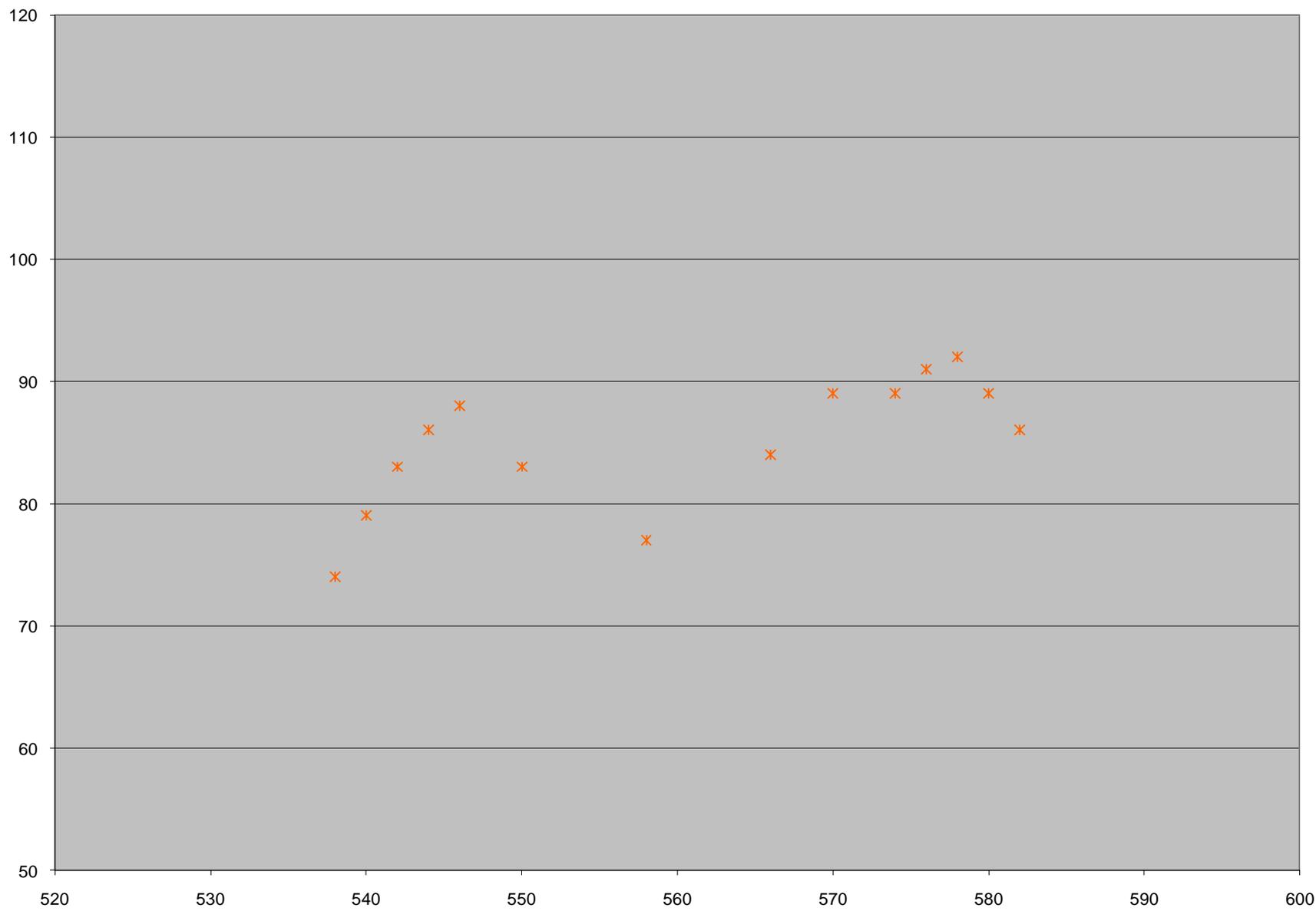
Jamie C

29th July 2008

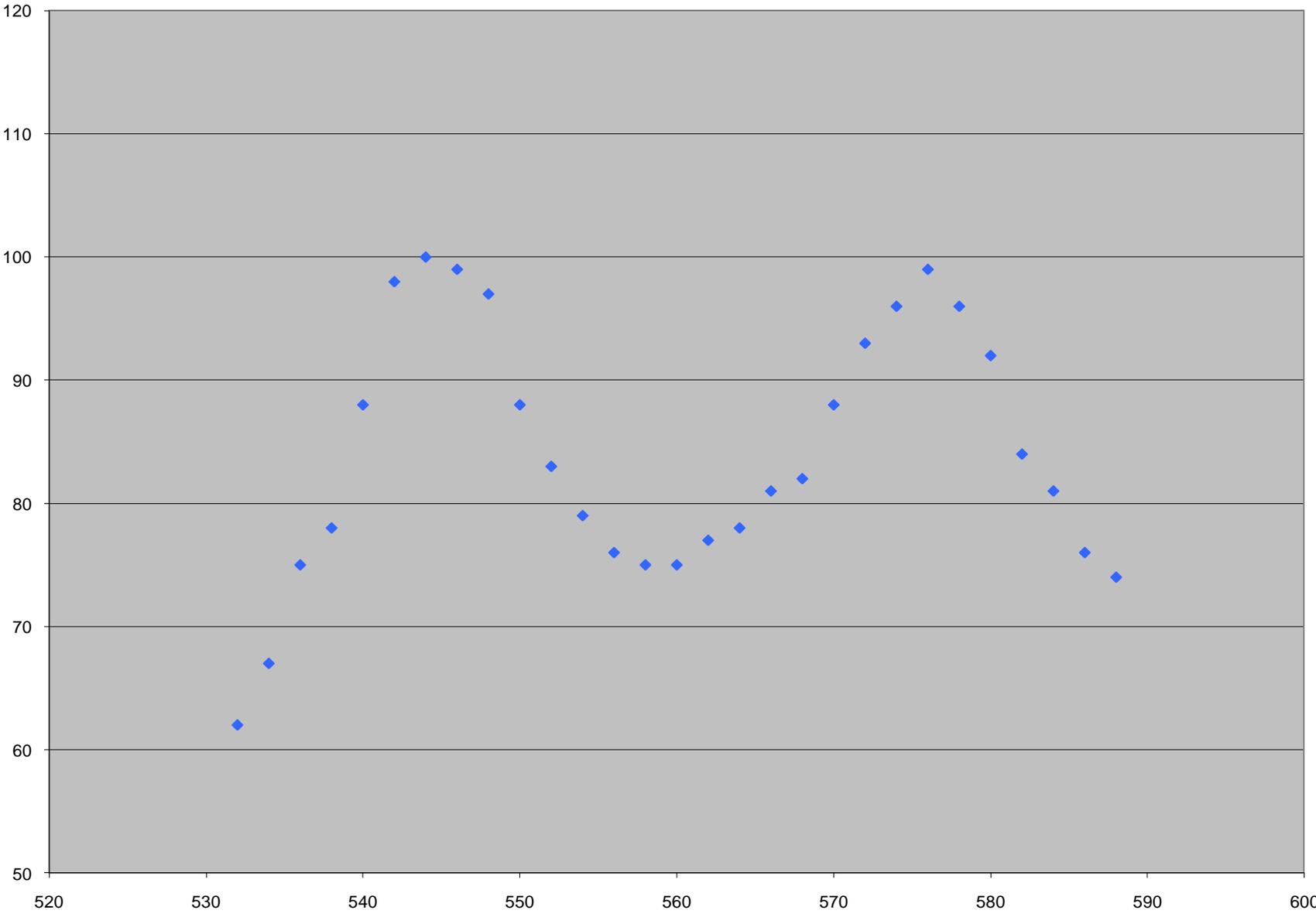
Laser/Focus/Timing

- Fine (2um) resolution profile scans in x & y
 - At different focus settings to check optimum
 - Select UP1200 as optimum
 - Horizontal scans presented on next slides...

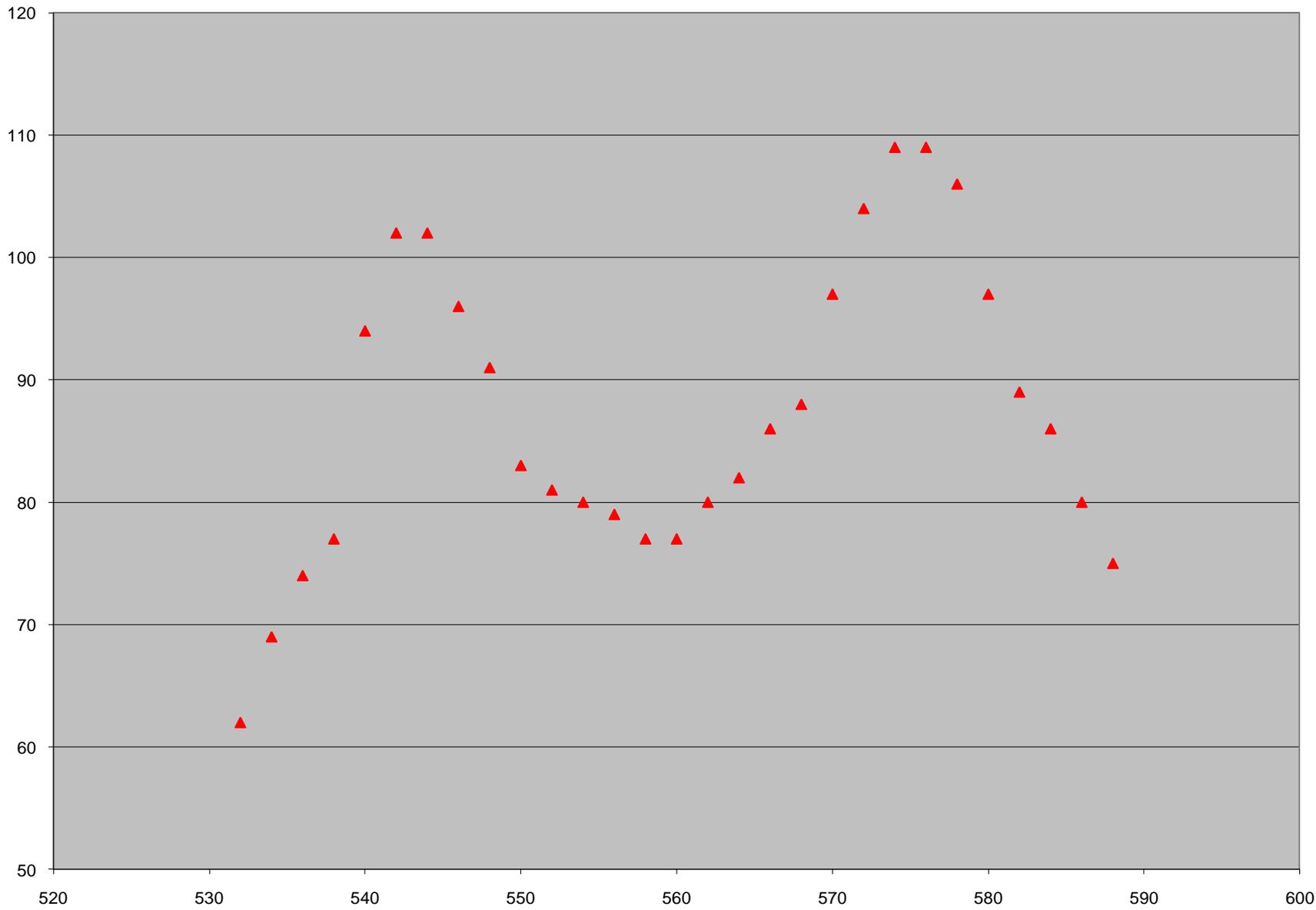
x Focus 900



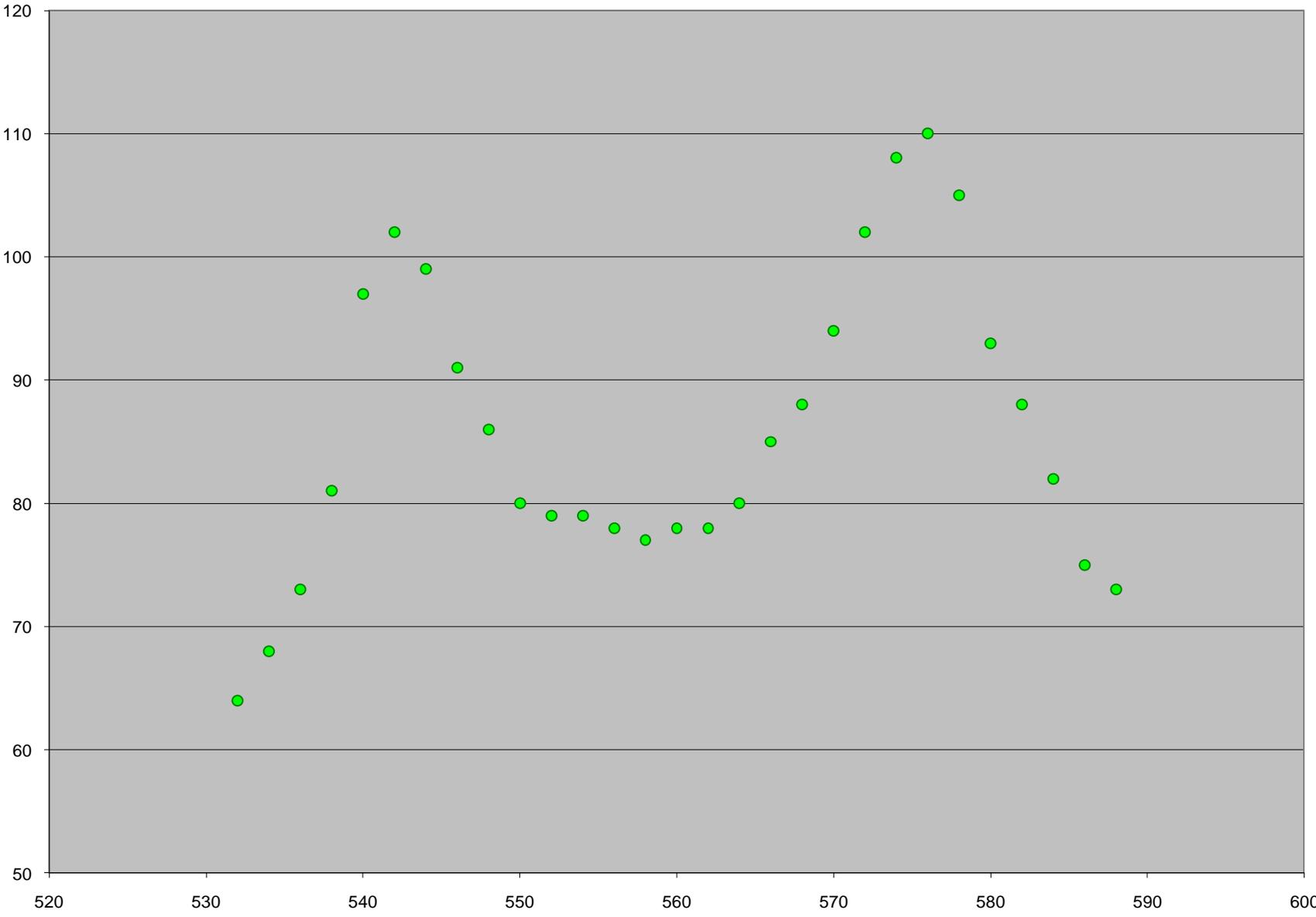
◆ Focus 1000



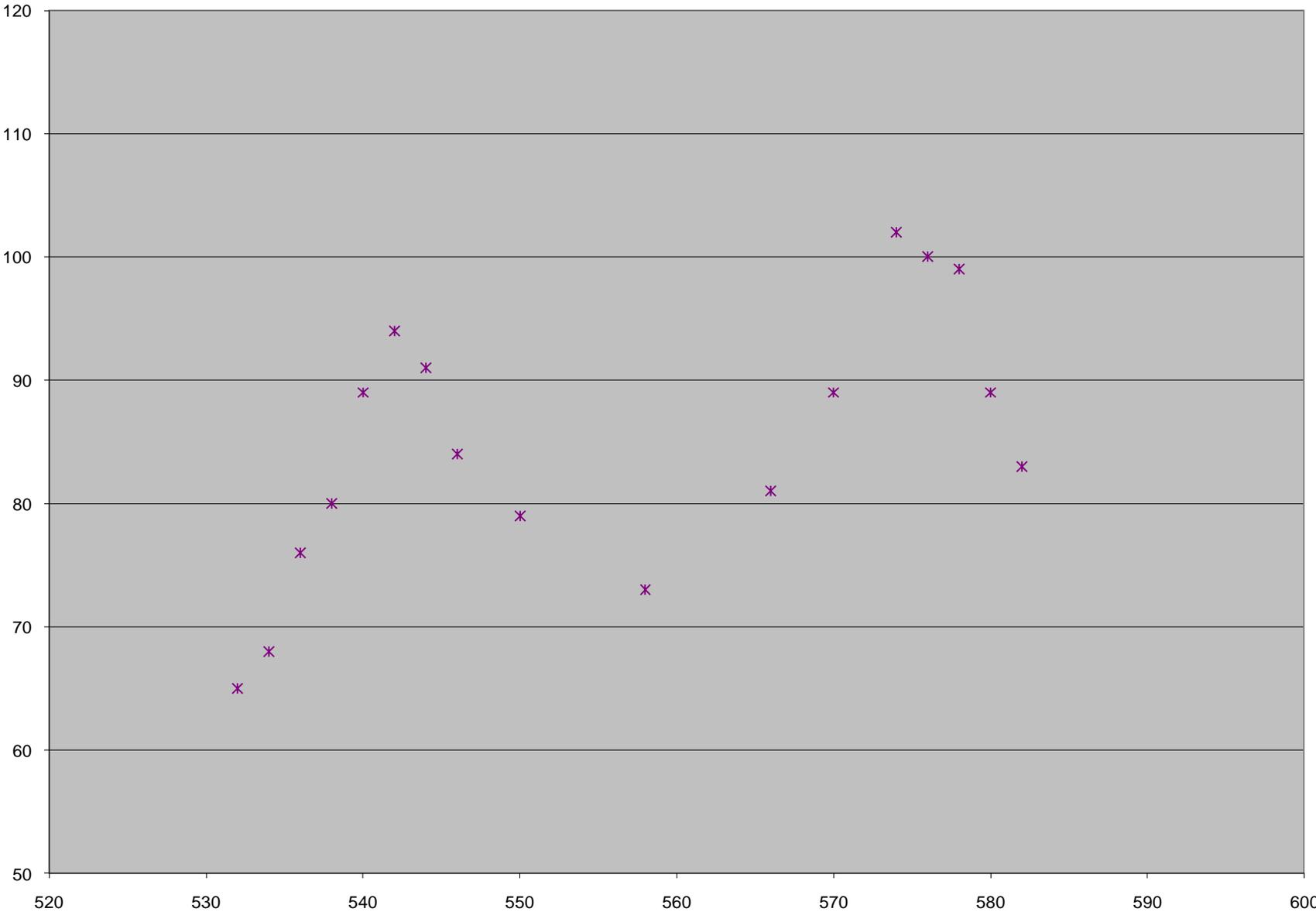
▲ Focus 1100

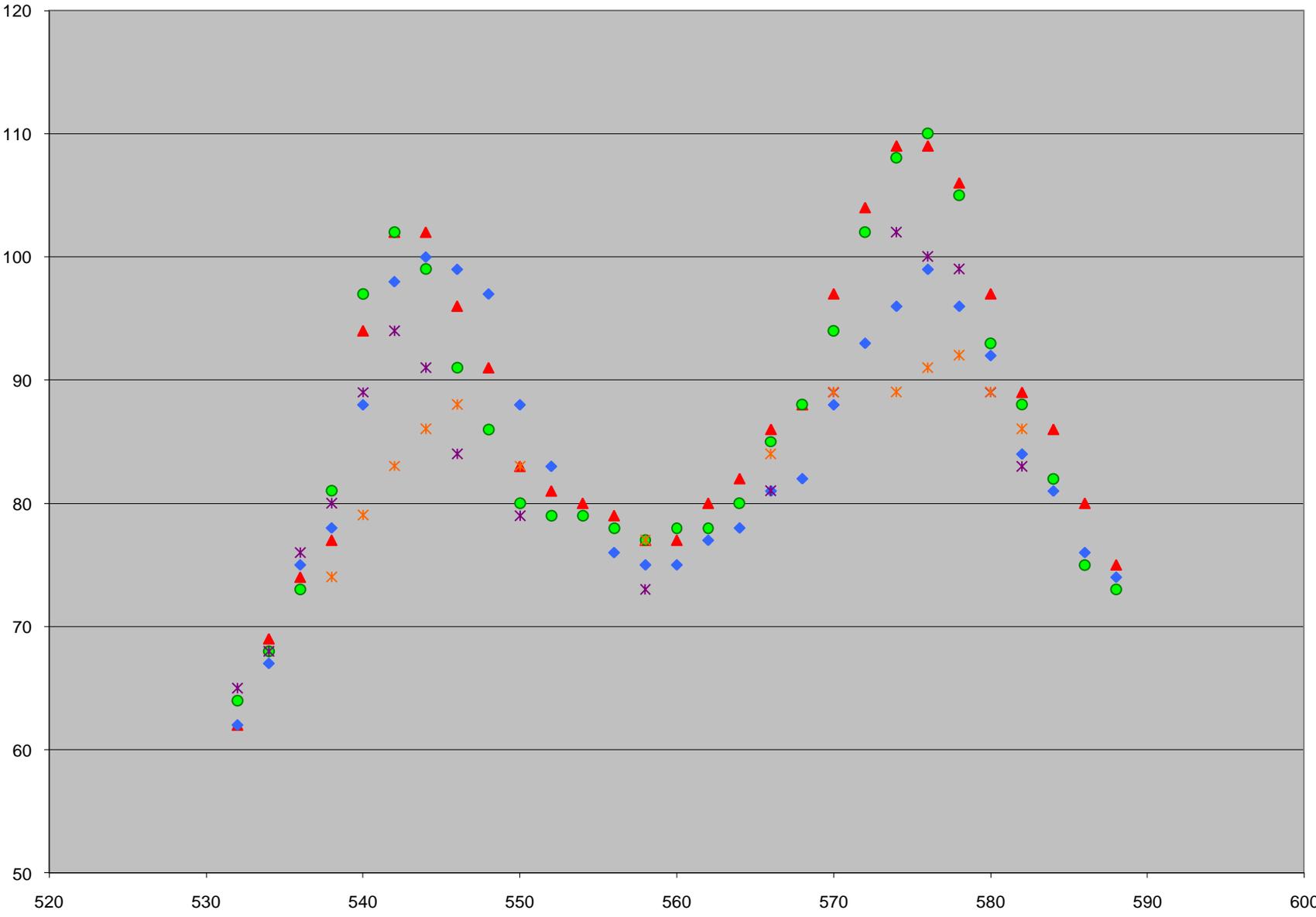


● Focus 1200

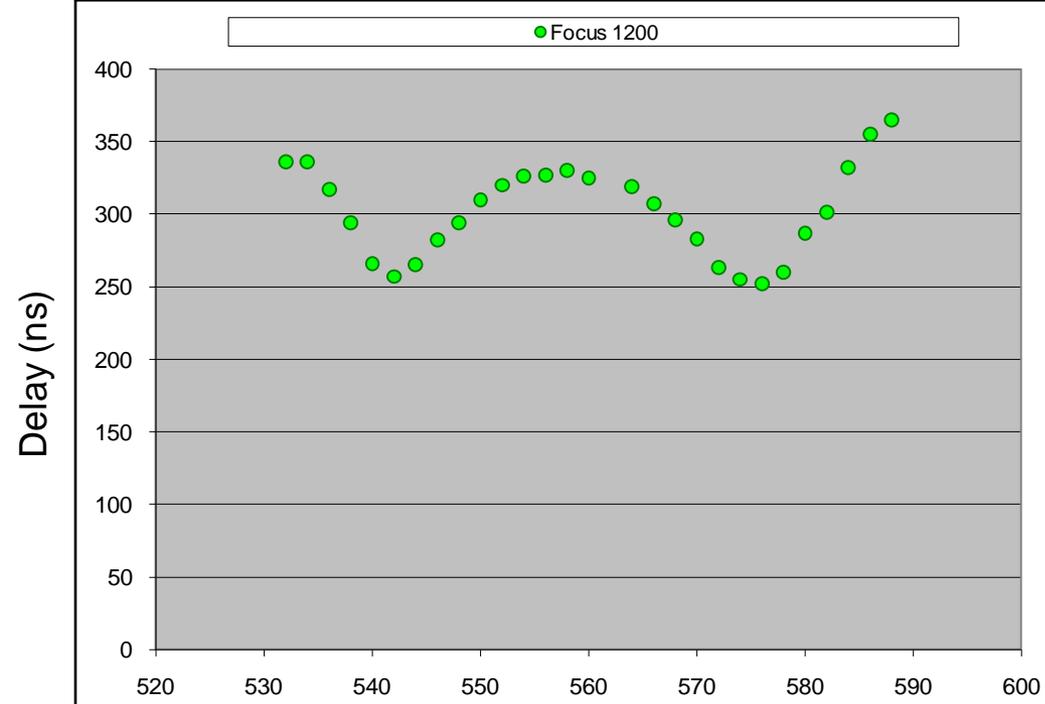
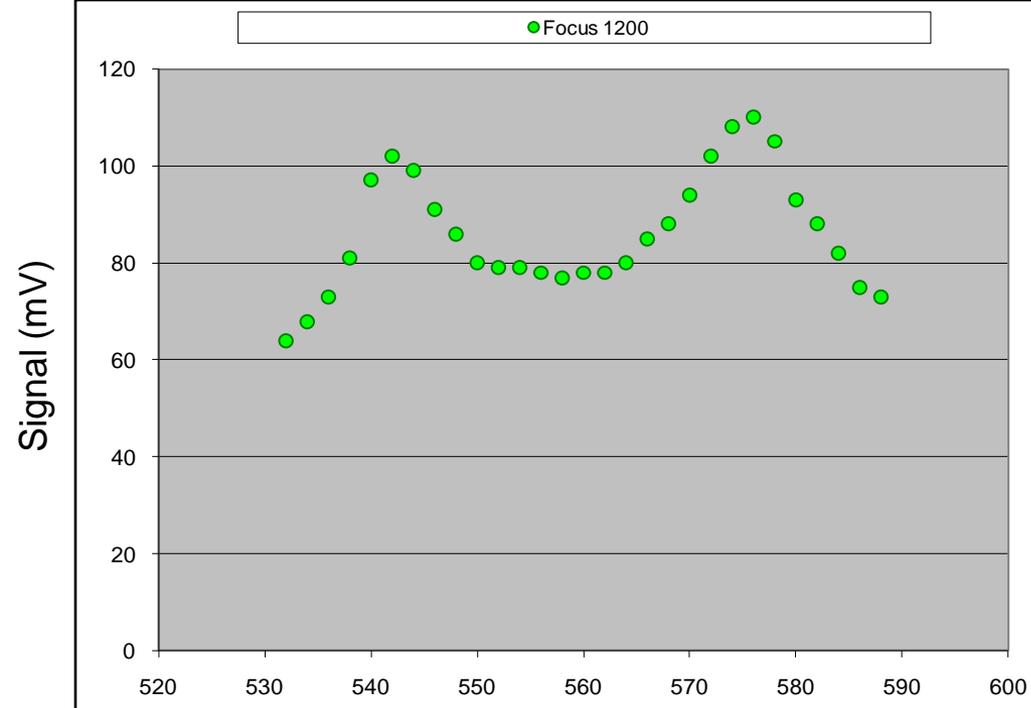


* Focus 1300

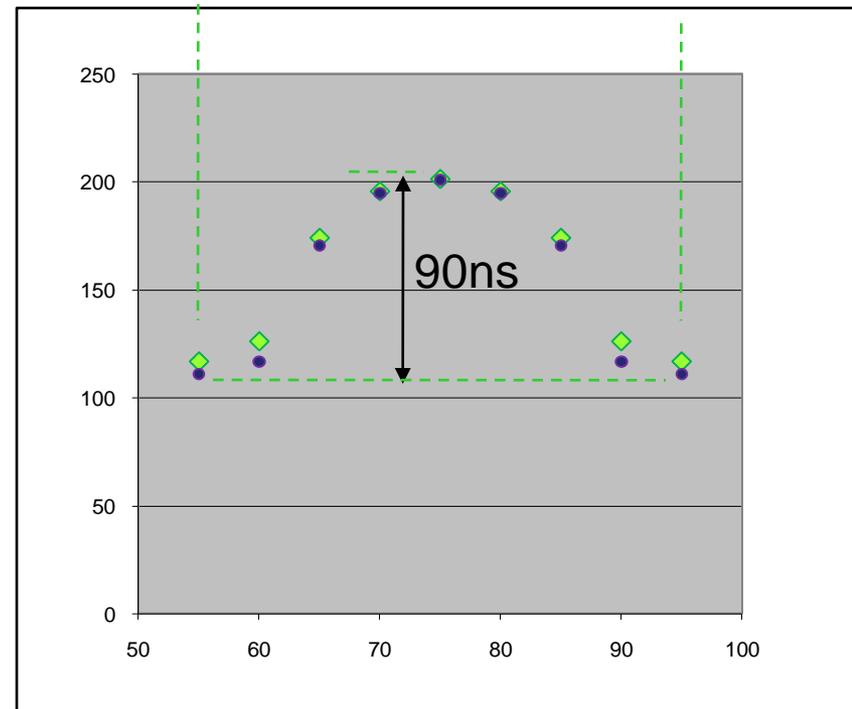
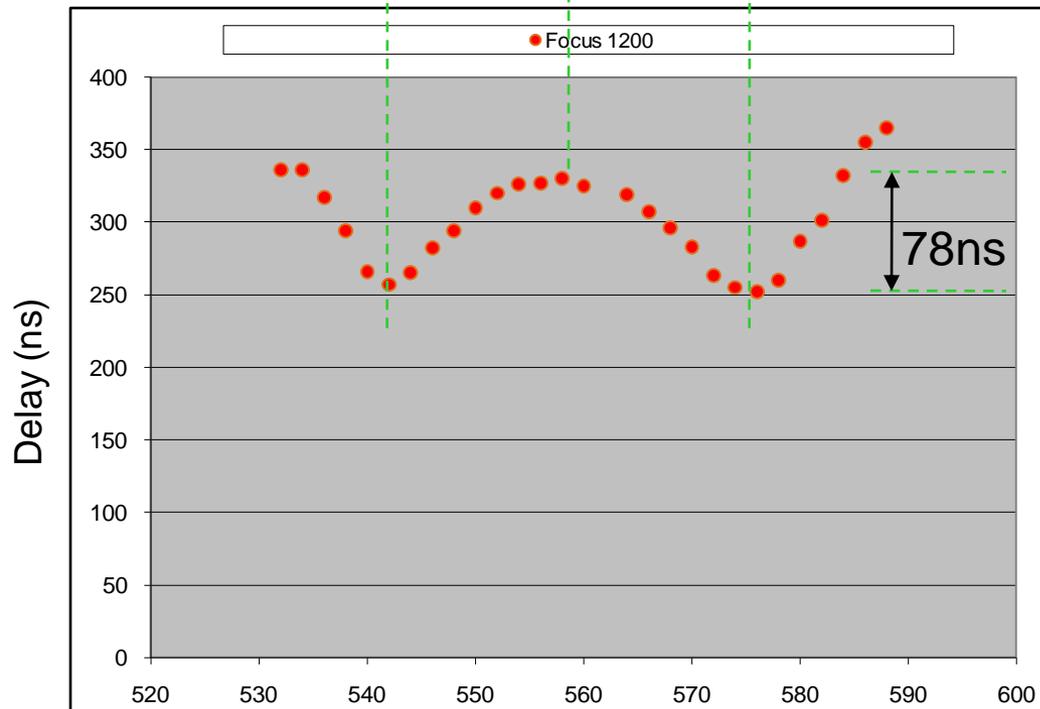
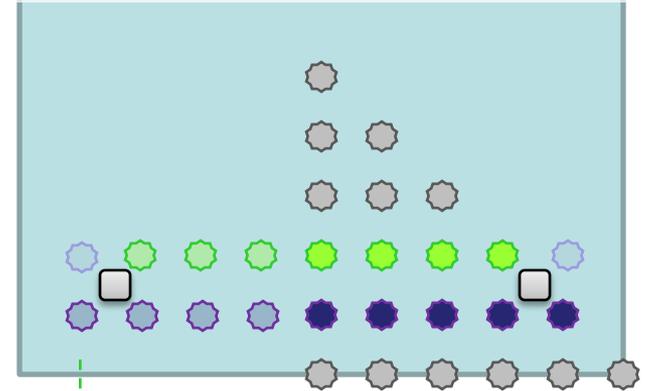
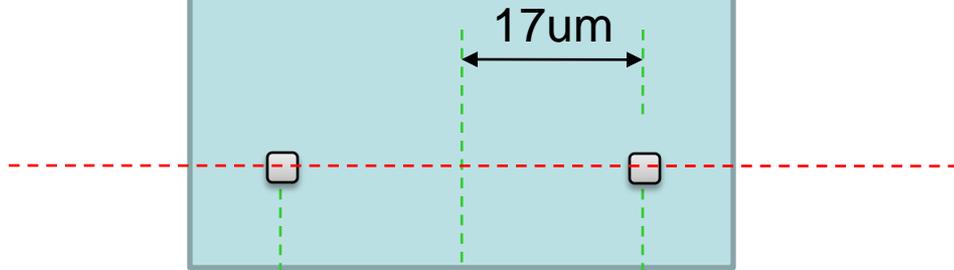




Focus 1200: Signal & Timing

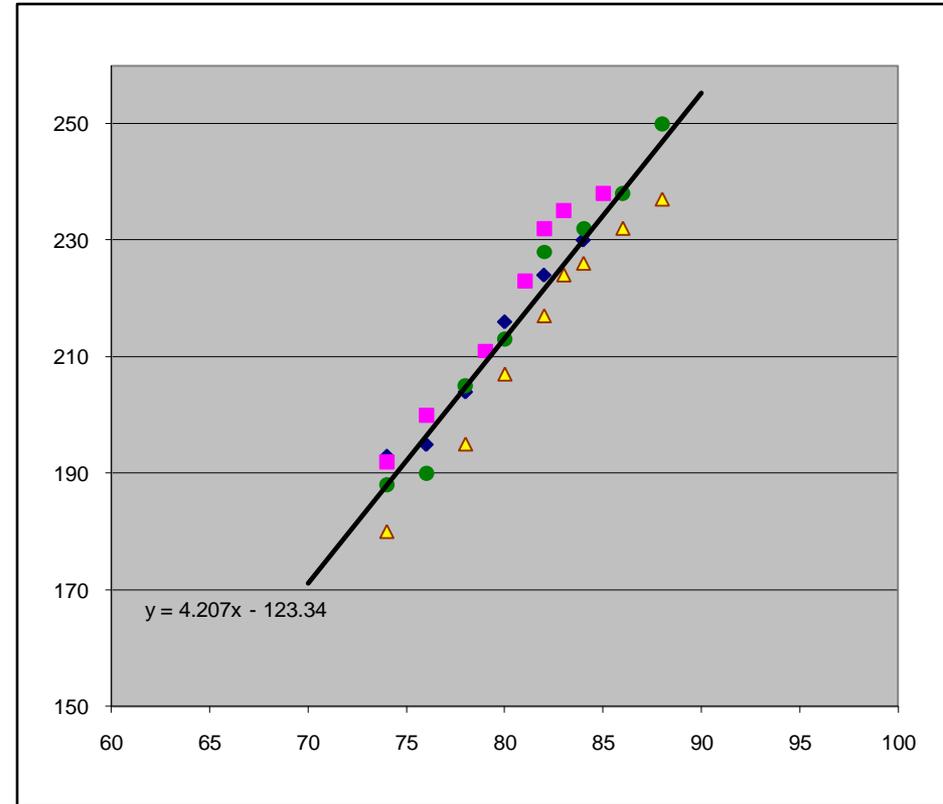


Compare My Timing with Giulio's Simulations

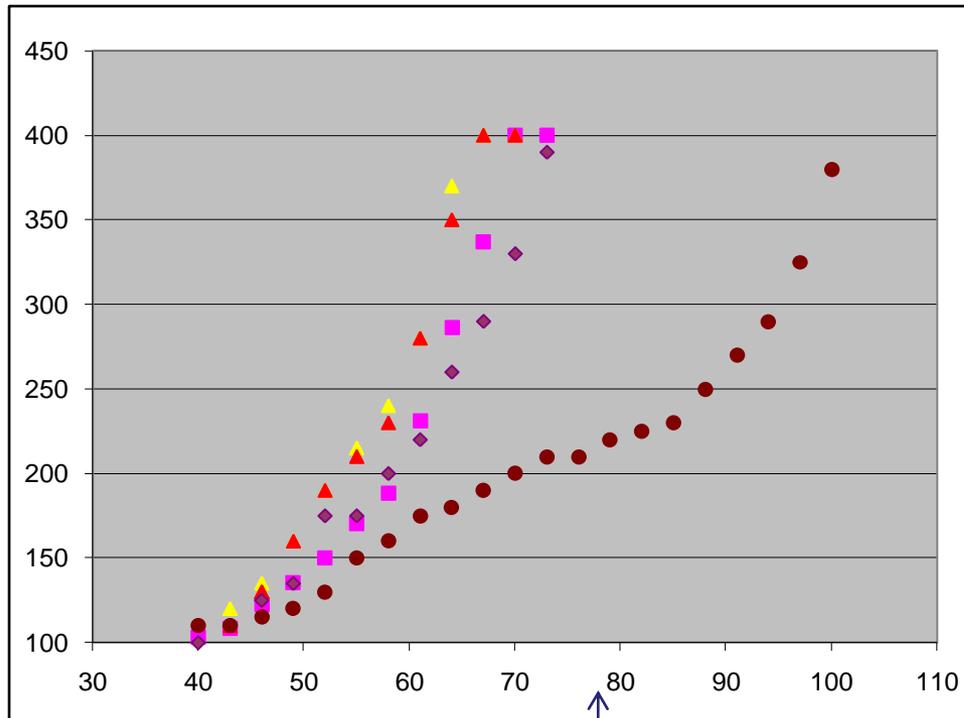


Pixel gains

- Vary laser intensity
 - In test pixel: position laser over each of the 4 diodes... →
 - 3x3 shutter
 - Fe55 from Konstantin gives peak $\sim 207\text{mV}$
 - Select 79% intensity to model Fe55 hit



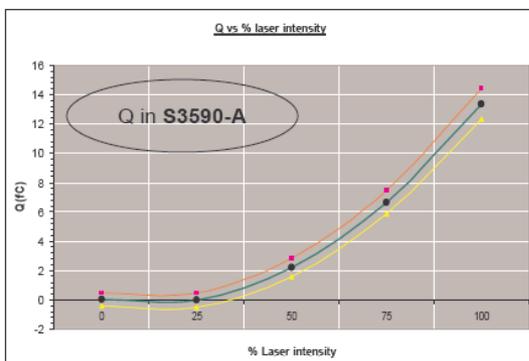
First look: Pixel Gains in Bulk



- Laser intensity scans from 5 adjacent pixels
- Small (9x9) region is unmasked
- Run threshold scan, and estimate (by human) where the laser signal drops off
 - Not that scientific
 - Marcel & co will look into automating with root fitting functions...
- Repeatability issues suggest varying intensity is not particularly reliable and/or some reasonable settling time is required at each new intensity setting
- Recall Giulio's linearity plot
- Will do more now the laser is automated

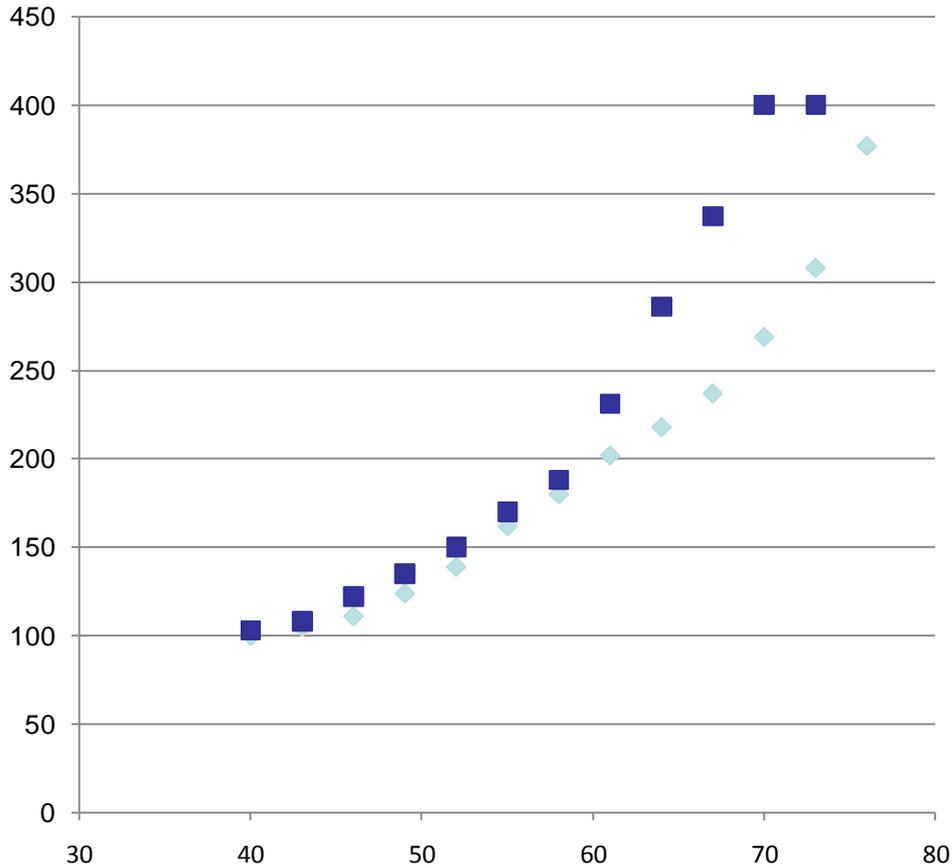
Giulio/Laser

Fe55



←

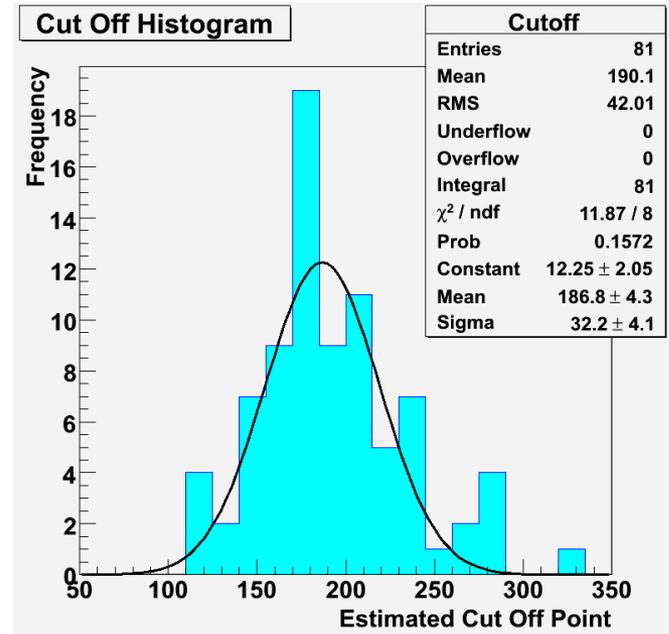
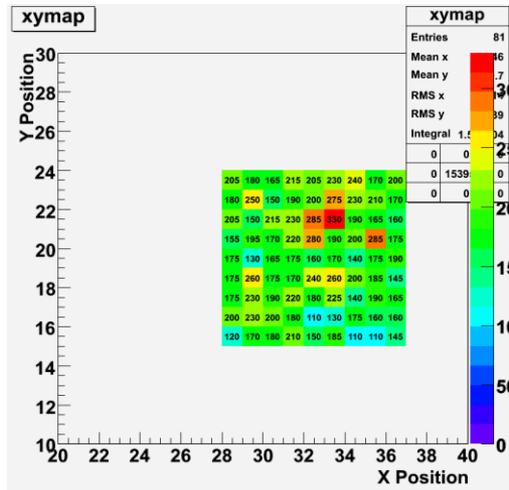
Effect of common mode



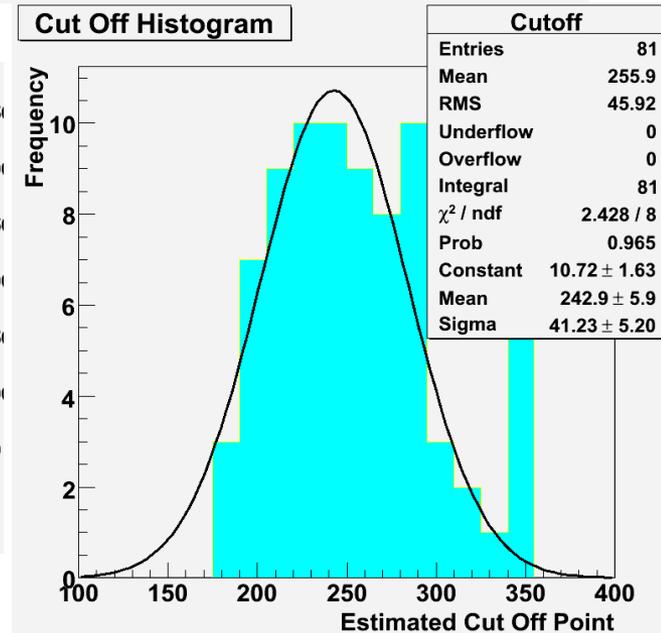
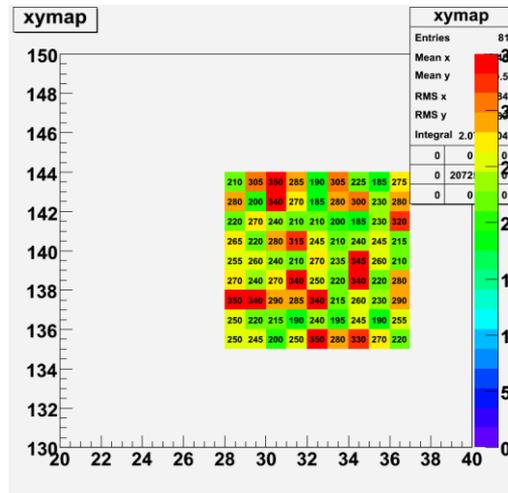
- Shows the early saturation when the lower common mode is used (known effect)

Pixel gain uniformity in Bulk

- From intensity scans, pick 60% as a sensible intensity
- move in steps of 50um to cover all active pixels in the 9x9 region
- Trims are all set to zero
- Record (by human) the signal drop-off point
- Apply pedestal value from the original per-pixel threshold scans
 - Thanks to Owen
- Repeat for both shaper variants
 - Thanks to Barnaby
- Now automated 😊
 - Thanks to Michael



(not applied to results shown here)



Laser Plan

- Spreadsheet of laser measurements underway
 - Summer students: Barnaby and Michael
- Much laser/daq now automated
- Additional laser interlock hardware will allow overnight runs soon

Laser intensity 1a

Laser intensity 1b

Gain uniformity 1

Laser intensity 2b

Gain uniformity 2

Trim intensity 1

Alignment 1

Alignment 2

Focus 1

Full automatic alignment

Gain uniformity 3

Testpix Alignment

Testpix Giulio's 21pts

Testpix full profile