Using HETGS to Verify the ACIS QE Uniformity
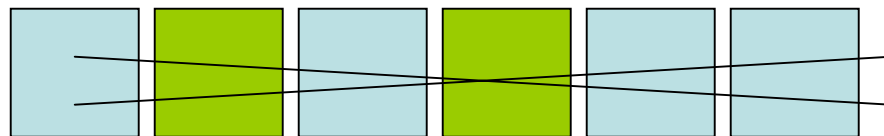
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MIT CXC

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Motivation for QEU Verification

- CTI variation with chip Y degrades ACIS resolution and QE

- In CC mode, SIM is usually shifted
  - Shift up if damage is a concern
  - Shift down if NH is high

- Many TE mode observations are shifted for similar reasons
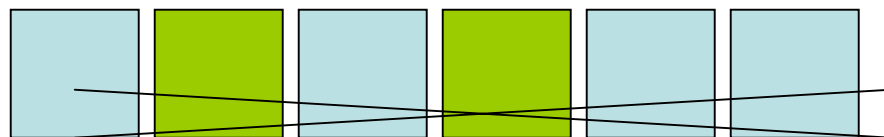
- Nominal: 70% of all HETGS

Nominal Configuration: SIM Z = 0 to -3 mm

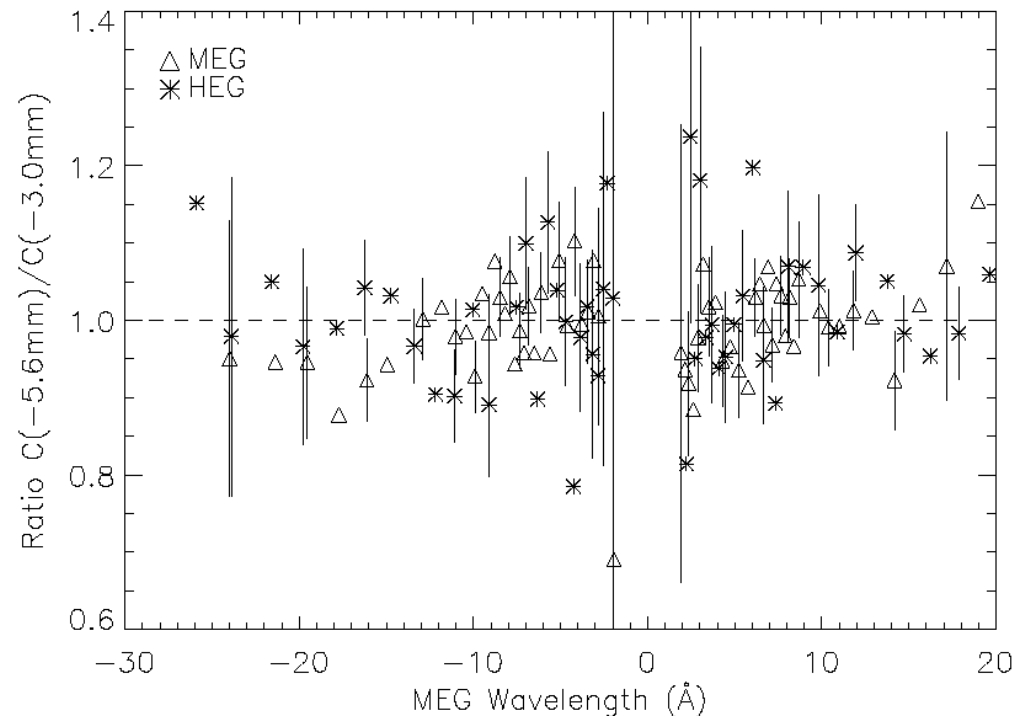Bright TOO (>10 Crab): SIM Z = +4 mm

Bright, not TOO: SIM Z = -5.6 to -8.1 mm

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Observations of 3C 273: -5.6 mm

- 3 configurations
  - -3mm (nominal)
  - -5.6 mm
  - -8.1 mm
- Average flux varied < 3%
- Ratios are adaptively binned to 5% errors or <10% width
- No large QE nonuniformity yet observed at -5.6 mm

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Observations of 3C 273: -8.1 mm

- Same as for -5.6 mm
- Need to make a more detailed comparison to the QEU prediction