

QPB

K.D.Kuntz

Henry A. Rowland Dept. of Physics & Astronomy

S.L.Snowden

GSFC

QPB Recapitulation

The Goddard approach:

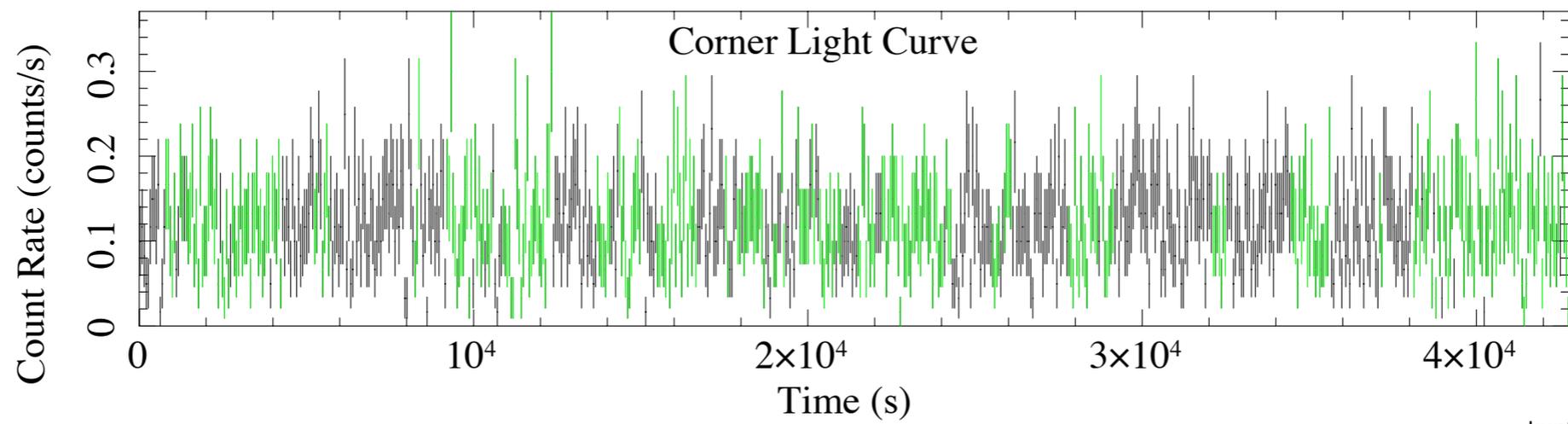
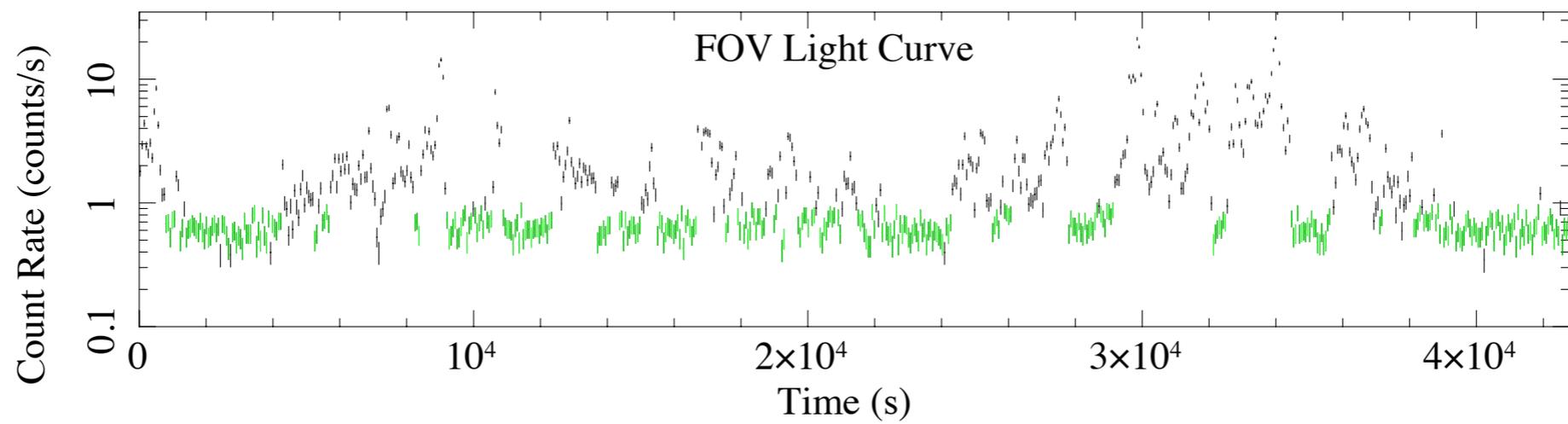
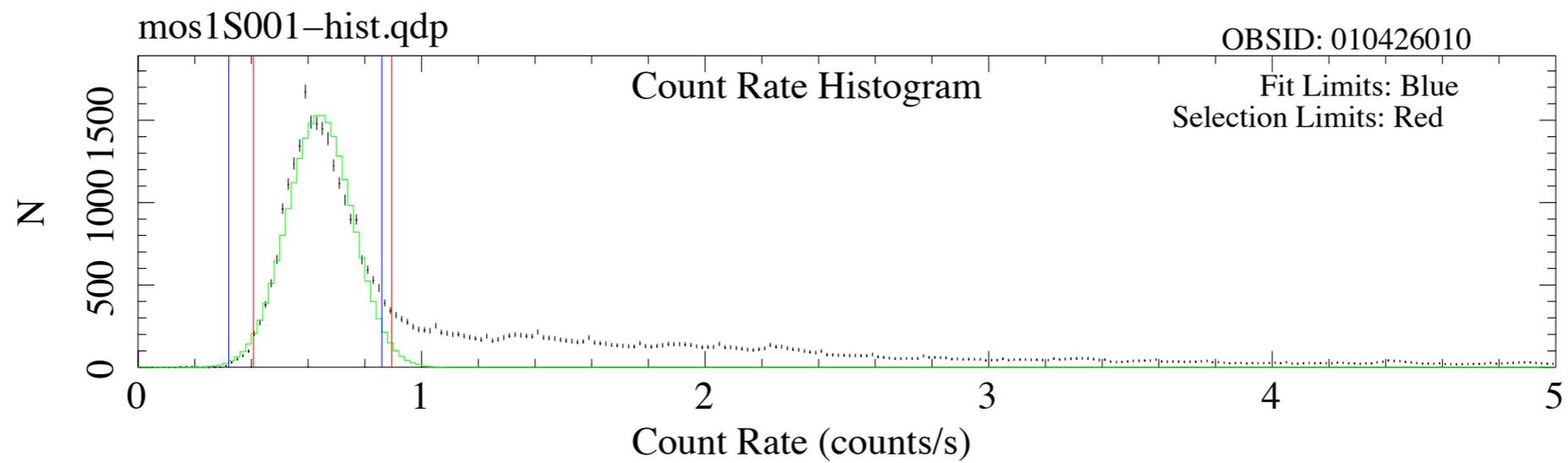
To study emission that fills the FOV (LHB, M33, etc)

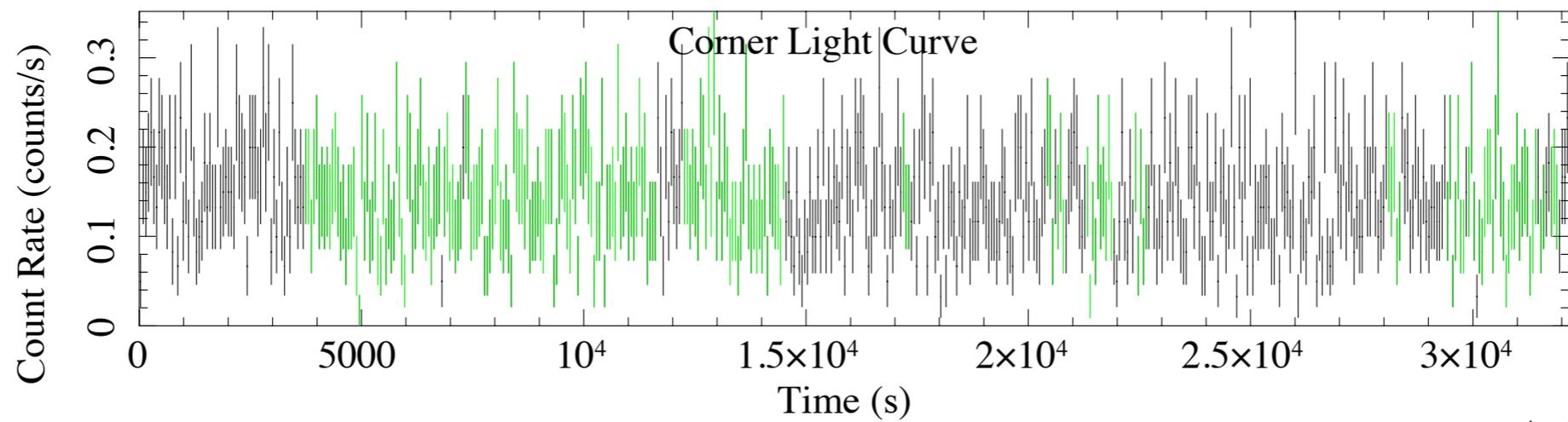
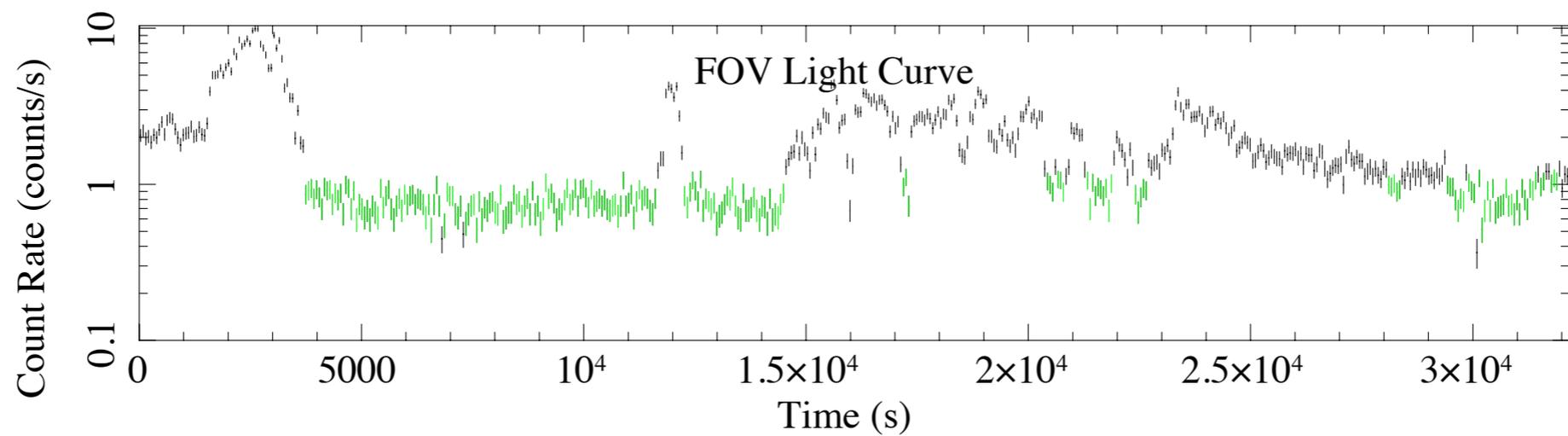
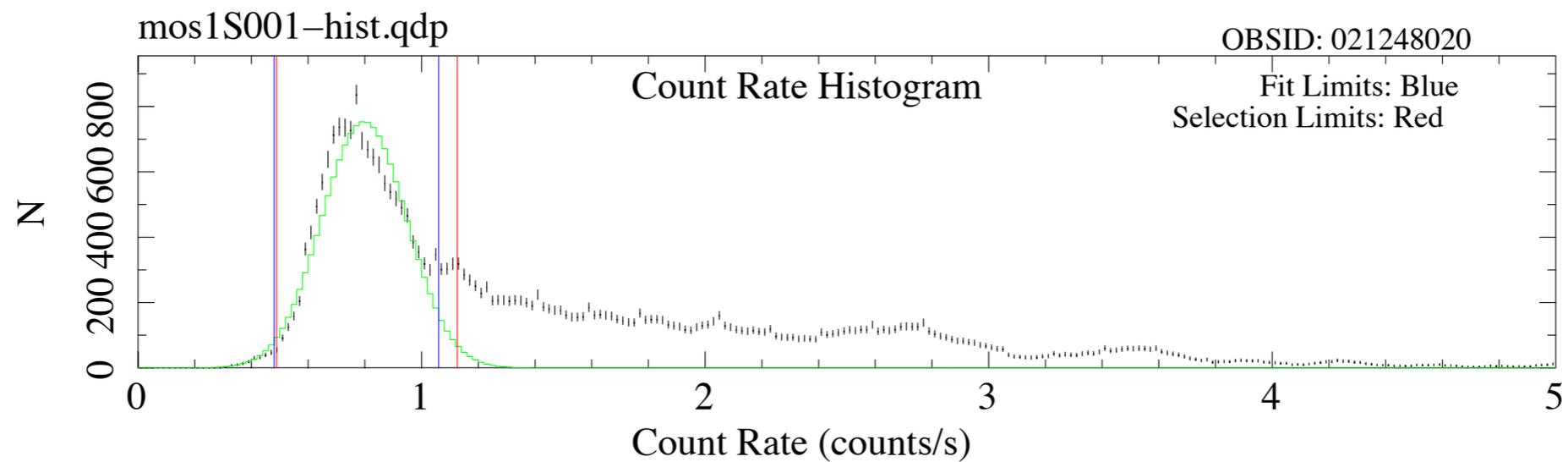
Need to characterize background components separately

QPB+SPF+SWCX+GF+EB+source

QPB determined from unexposed pixels & FWC data

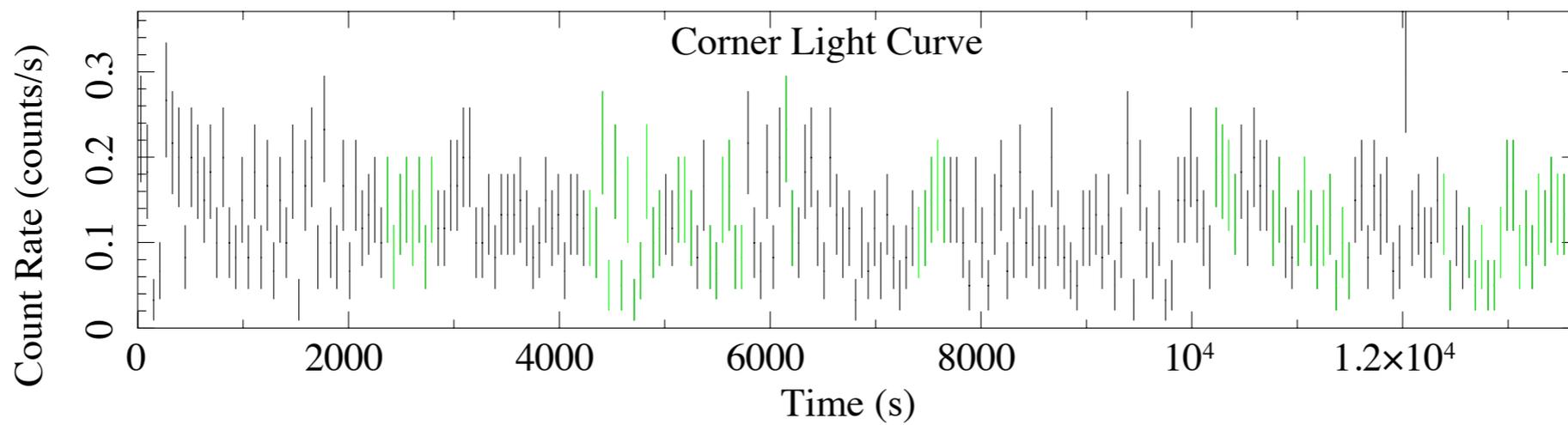
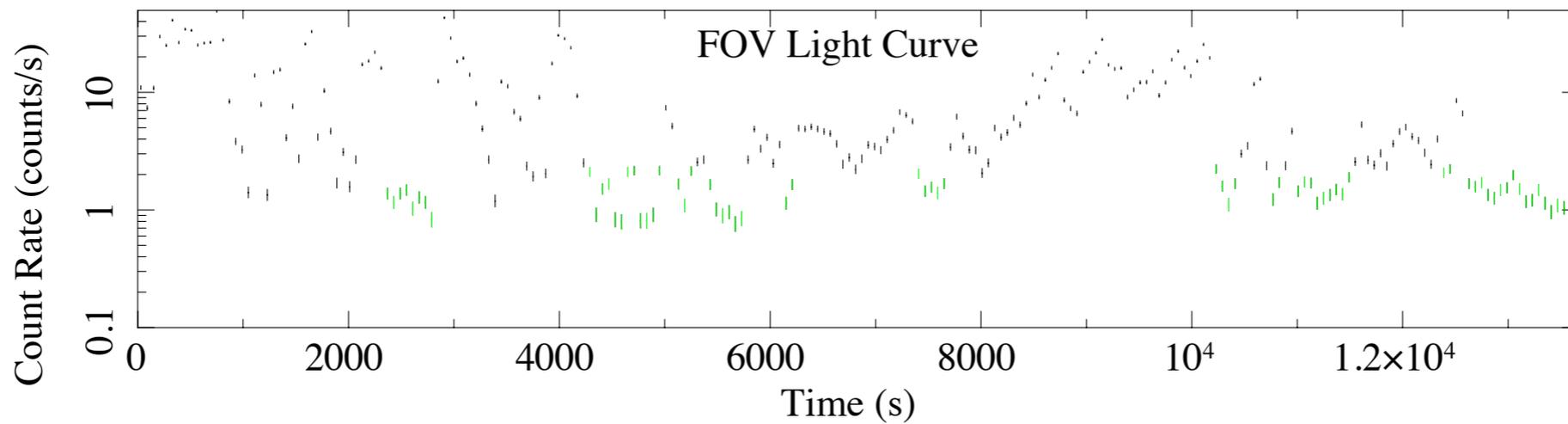
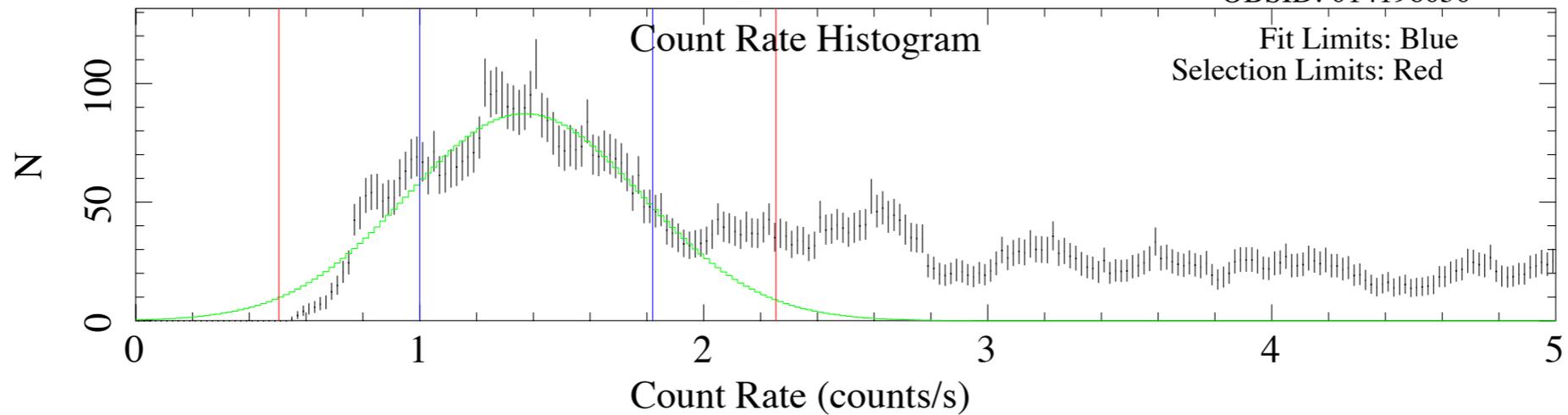
SPF determined from (flared image-unflared image)





0141980501/analysis/mos1S001-hist.qdp

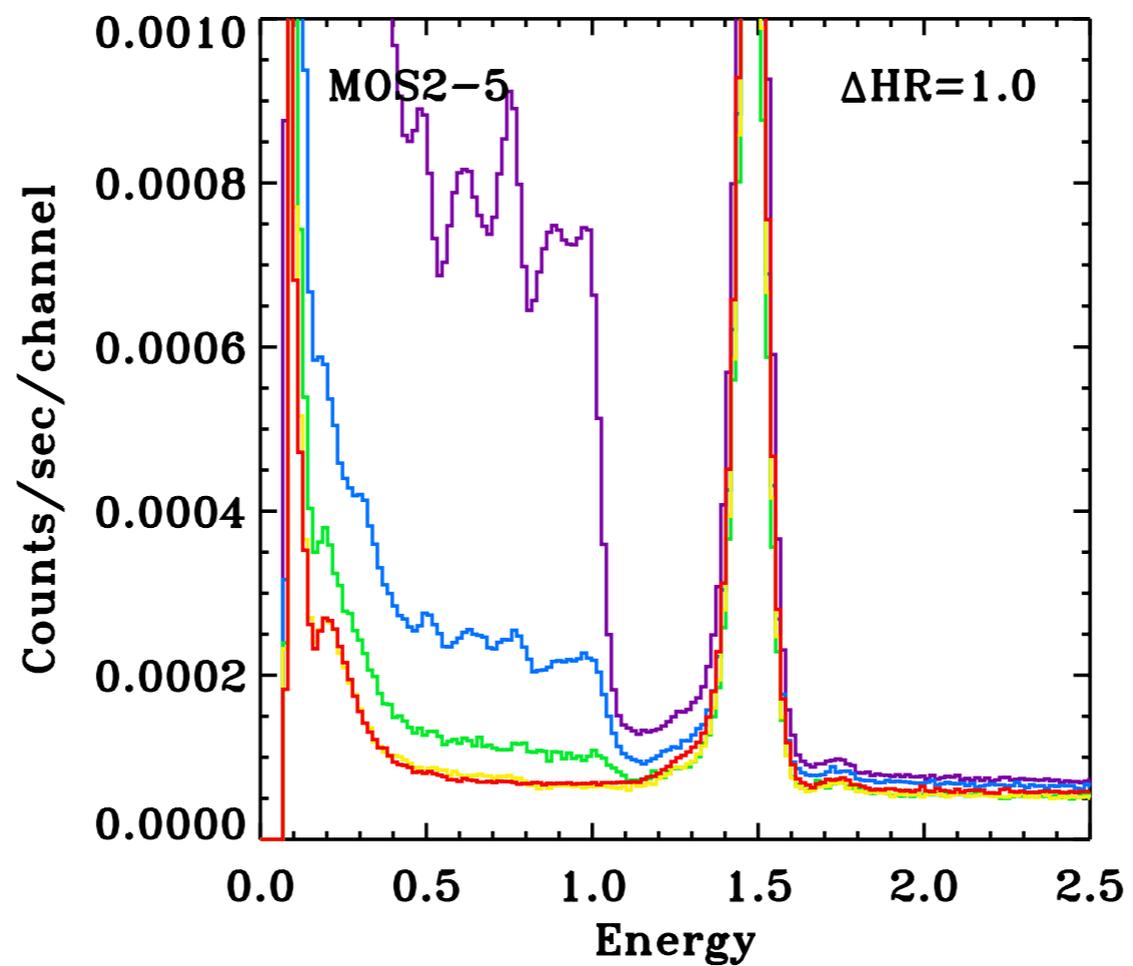
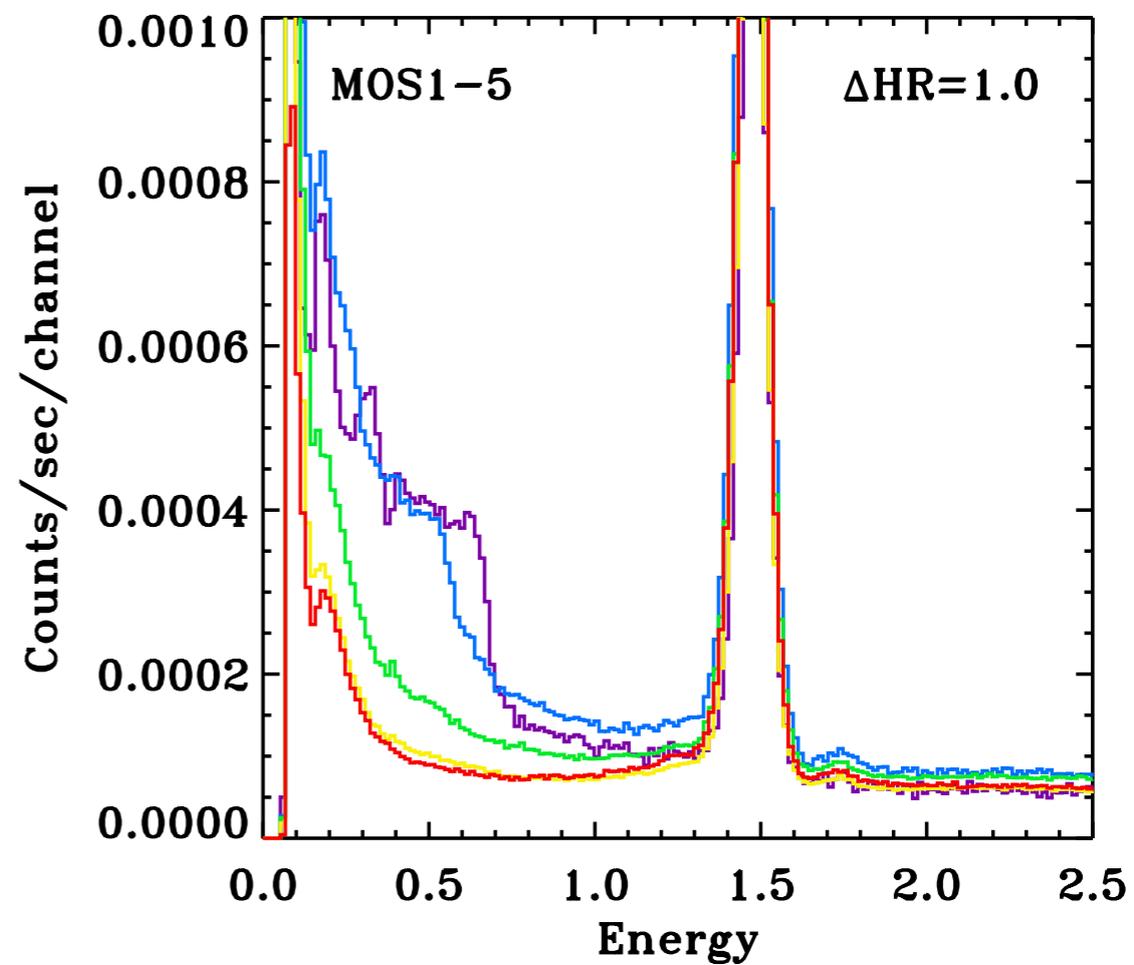
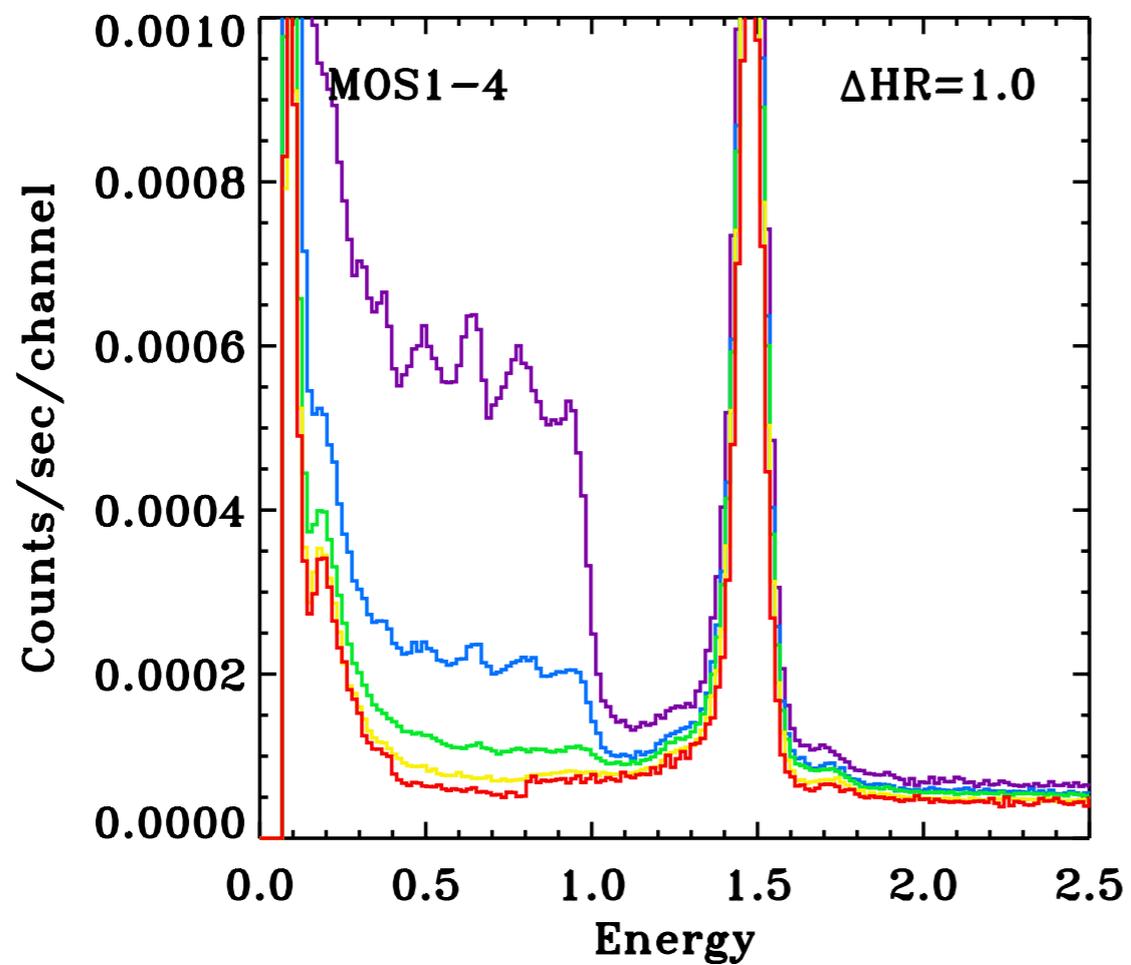
OBSID: 014198050



QPB Recapitulation

QPB Determination:

- MOS
 - QPB spectrum below 2 keV temporally variable
 - ▶ QPB spectrum must be tailored to obsid of interest
 - Some chips have anomalous states
 - background below 2 keV has highly var. spec. shape
 - ▶ “uncharacterizable” so data discarded



QPB Recapitulation

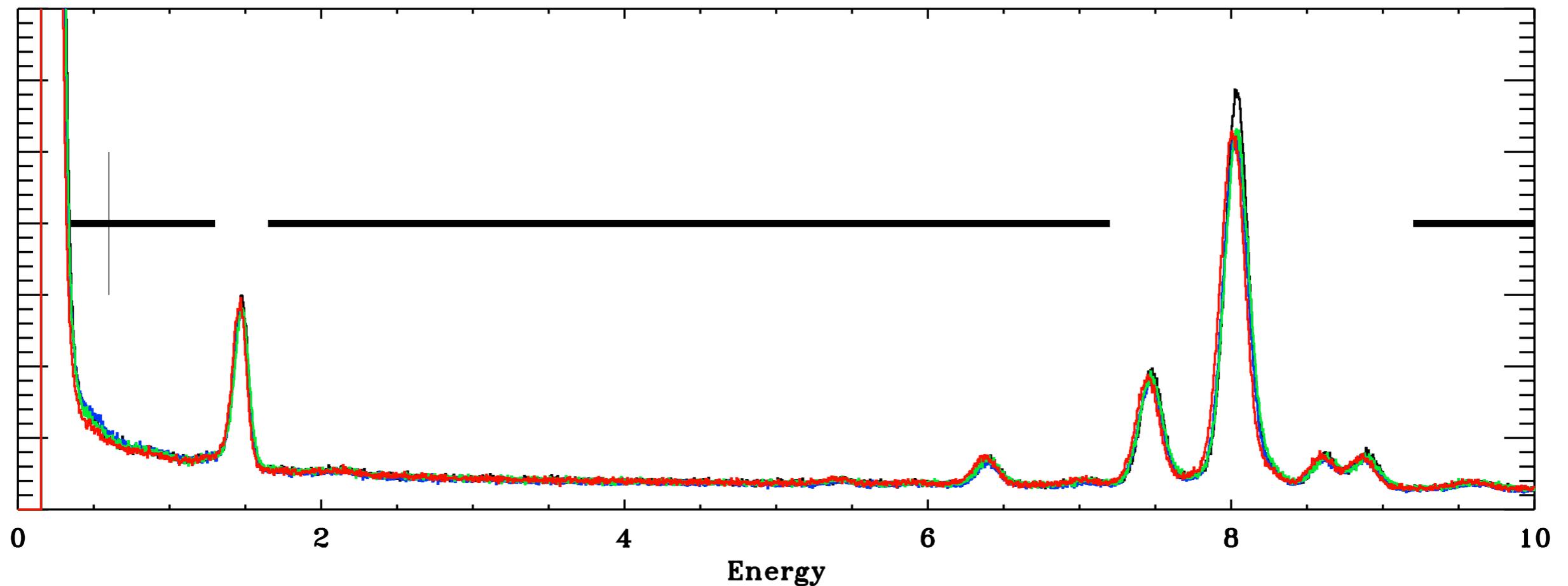
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- PN
 - QPB spectrum has a relatively constant shape
 - Due to OOT unexposed pixel data more difficult to use

QPB Recapitulation

QPB Determination:

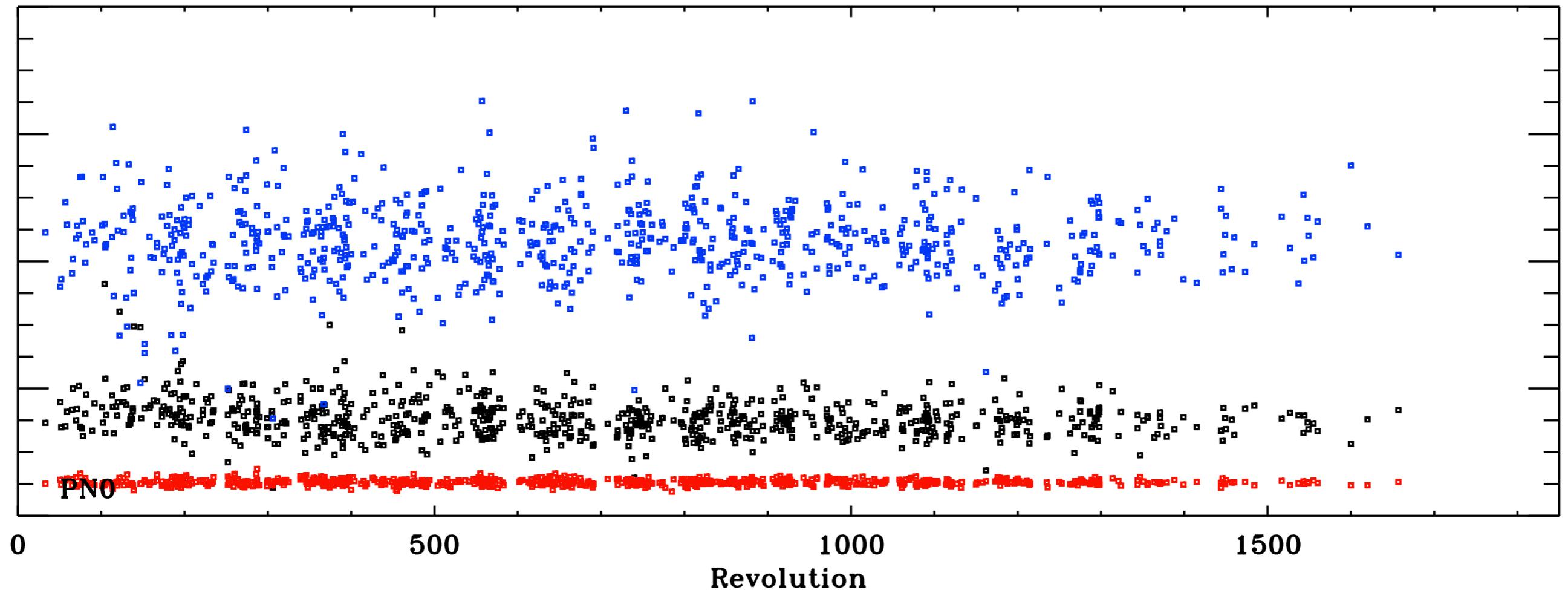
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QPB Recapitulation

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QPB Recapitulation

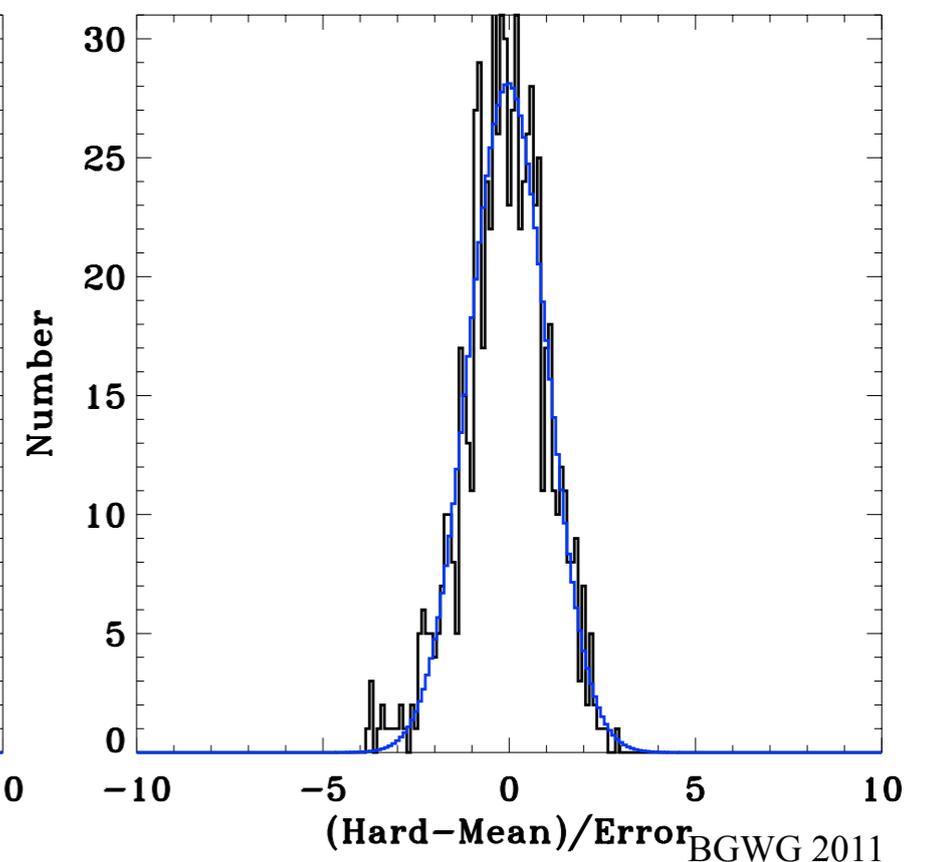
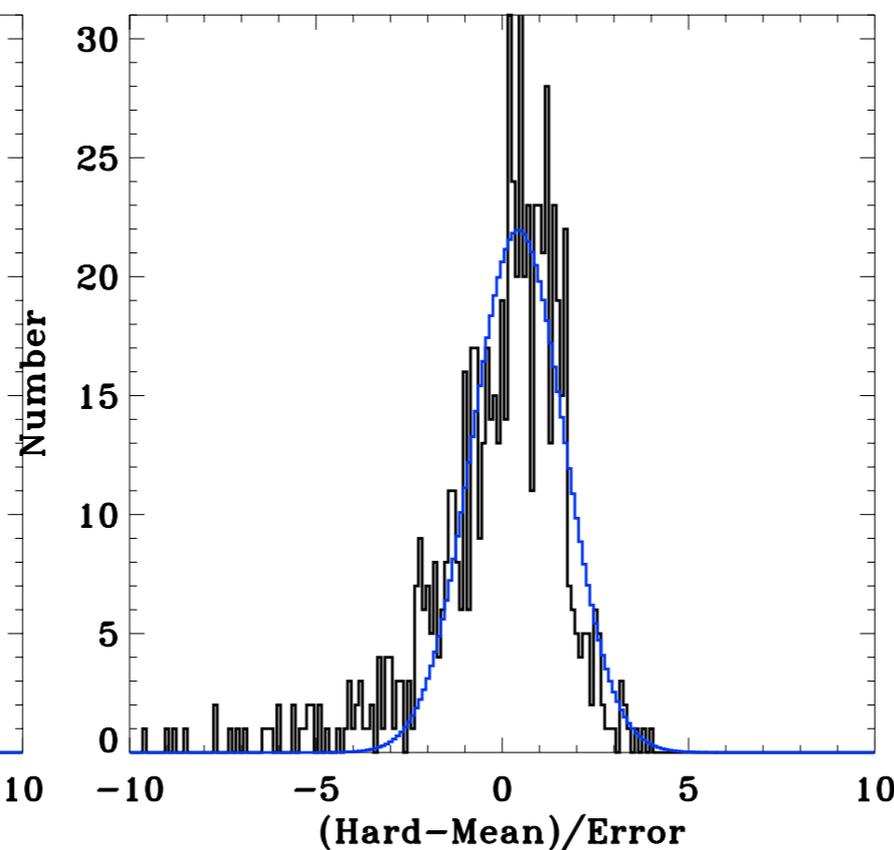
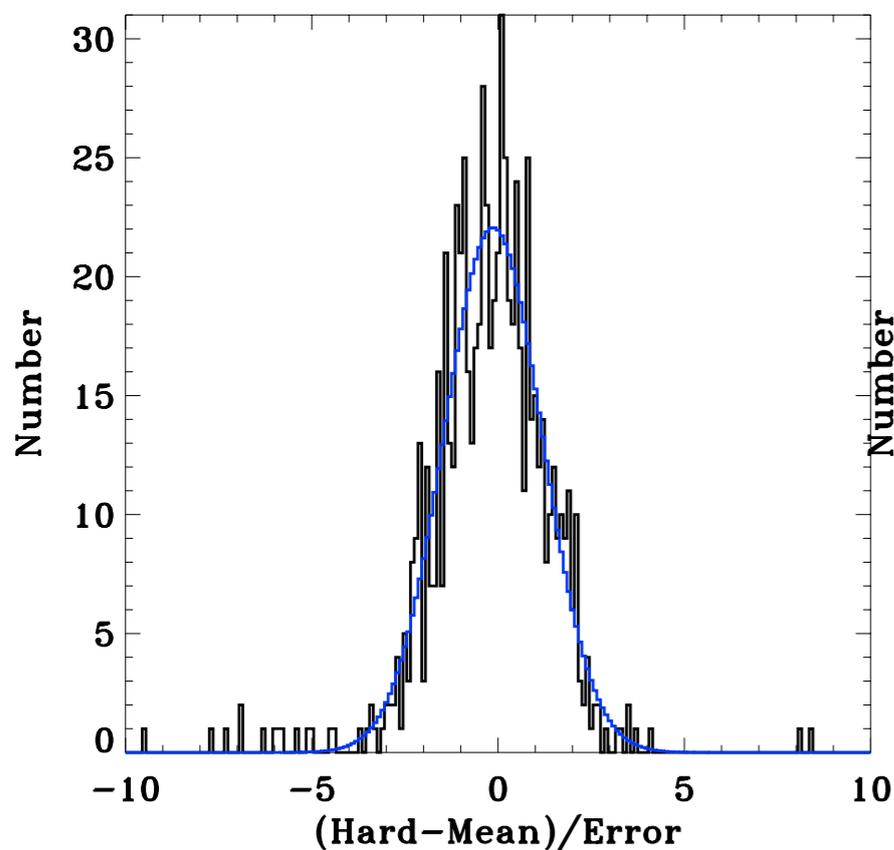
QPB Determination:

- PN
 - QPB spectrum has a relatively constant shape
 - Distribution of values nearly random
 - Due to OOT unexposed pixel data more difficult to use

0.6-1.3/0.35-0.6

1.65-7.2/0.6-1.3

9.2-13.5/1.65-7.2



QPB Characterization

MOS:

- Old Method
 - Form light-curve for full FOV
 - Identify and remove periods of soft proton flares
 - Verify (by hand) that filtering worked correctly
 - Extract unexposed (“corner”) pixel data
- However
 - SP flares do not penetrate shield over the unexposed pixels
 - ▶ filtering out SP flares unnecessary
 - strong QPB variations can occur
 - spectrum of enhancements not known
 - ▶ need to filter out enhancements

QPB Characterization

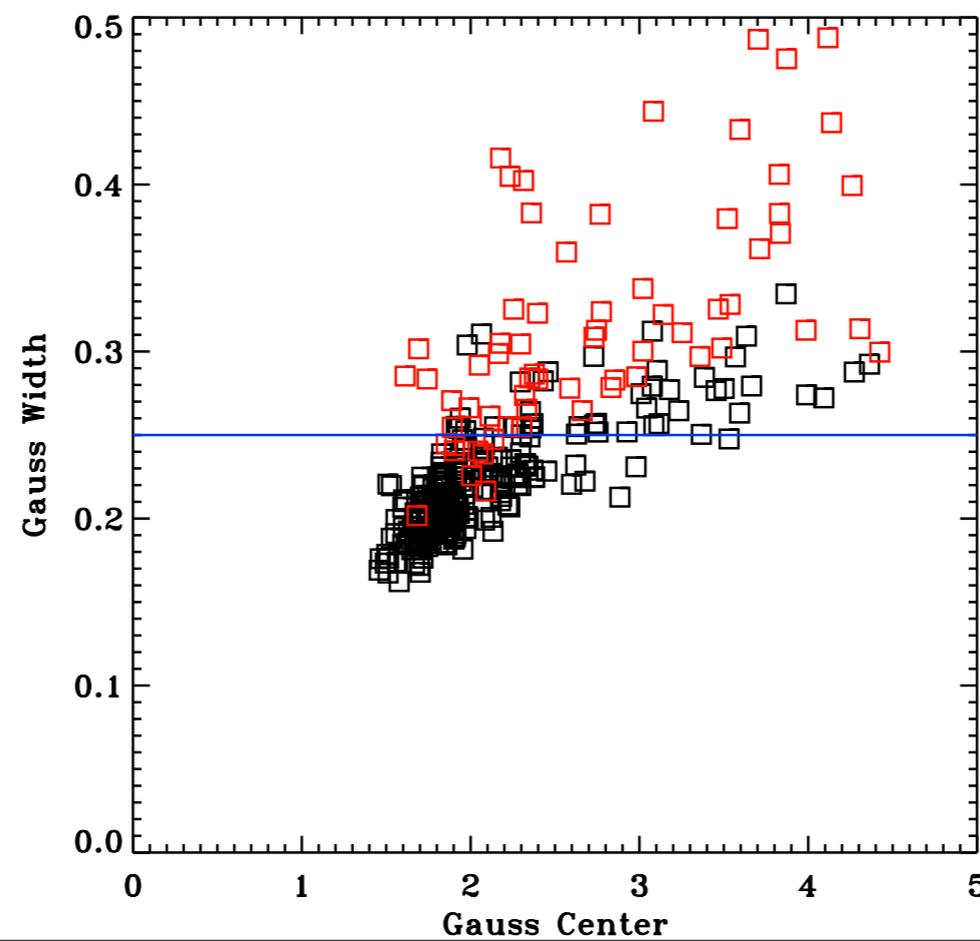
MOS:

- New Method
 - Form light-curve from unexposed pixels only
 - Identify and remove enhancements
 - Light-curve fitting quite reliable in this situation
 - Much, much more available data
 - ▶ over 6000 observation segments

QPB Characterization

PN:

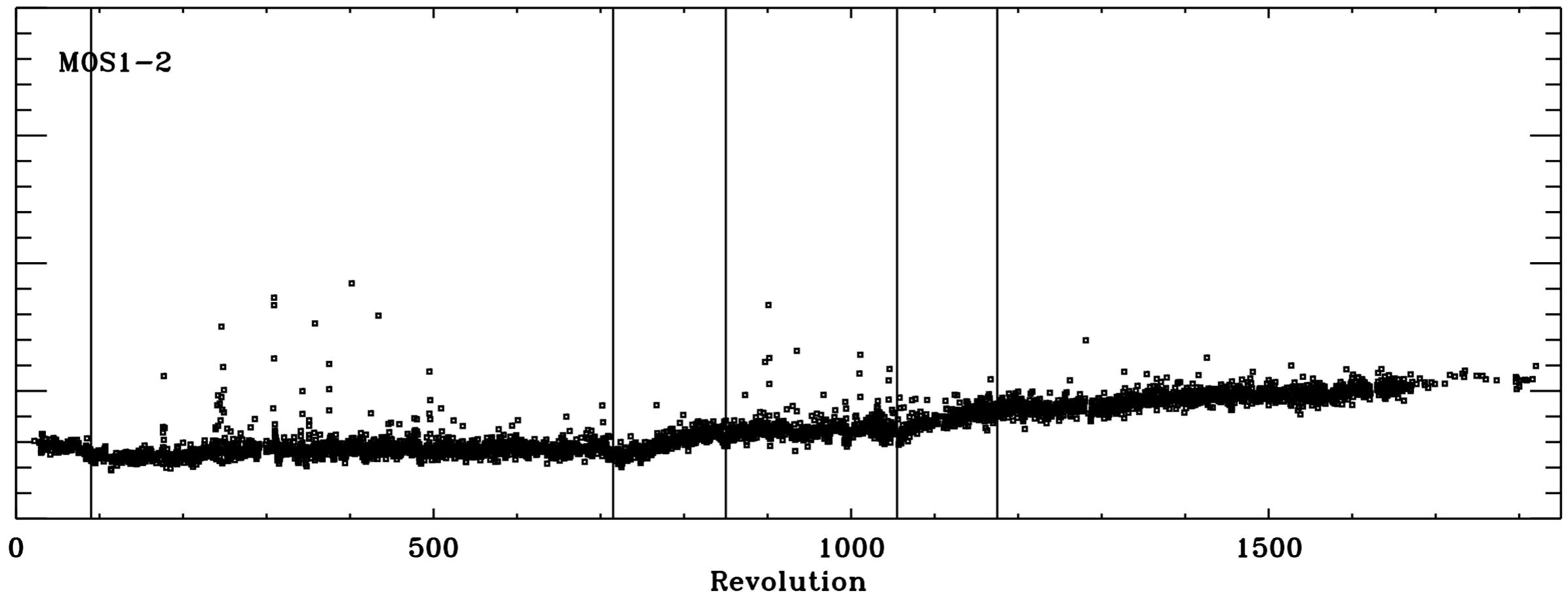
- New Method
 - Form light-curve from full FOV
 - Identify and remove soft proton flares and others
 - Use histogram fit parameters to verify filtering
 - ▶ automatic rejection of badly filtered obsids
 - based on sample of 1800 obsids



Instrument Health

MOS:

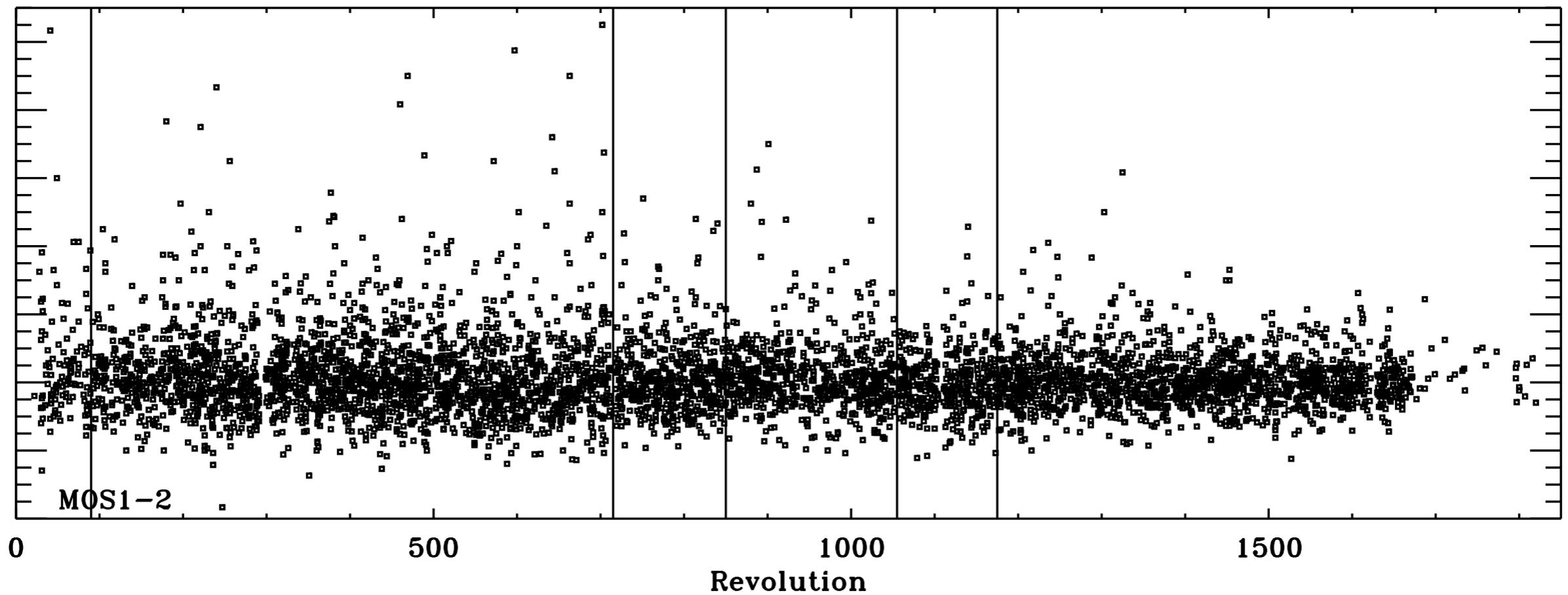
- General increase of QPB rate



Instrument Health

MOS:

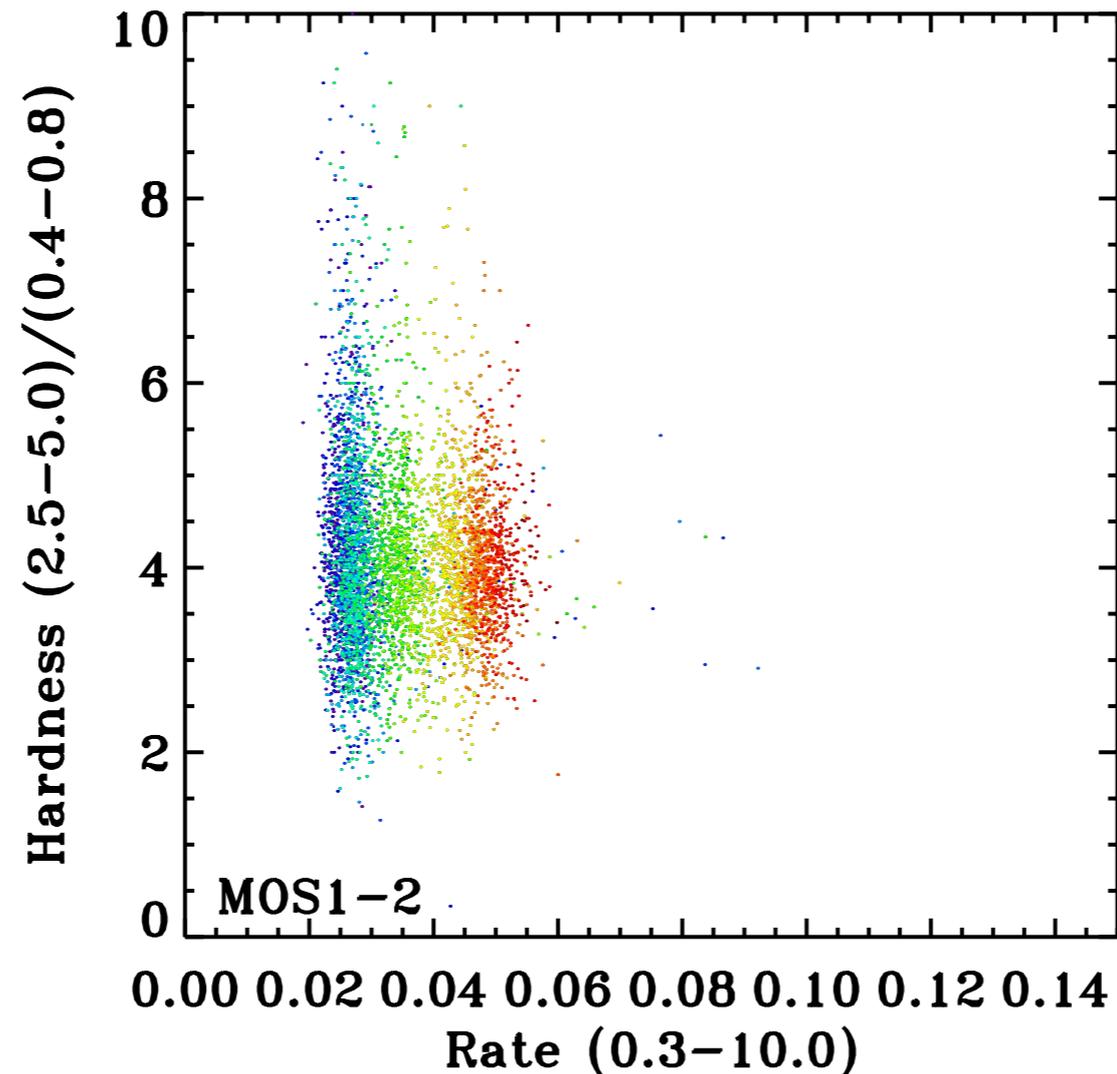
- General increase of QPB rate
- No long term trends in QPB hardness ratio



Instrument Health

MOS:

- General increase of QPB rate
- No long term trends in QPB hardness ratio
- Plotted as rate versus hardness ratio



Instrument Health

MOS:

- General increase of QPB rate
- No long term trends in QPB hardness ratio
- Plotted as rate versus hardness ratio

