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)
Count Rate Histogram

Fit Limits: Blue
Selection Limits: Red

FOV Light Curve

Corner Light Curve

OBSID: 010426010
mos1S001–hist.qdp
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

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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

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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

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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

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