

Filter Wheel Closed Calibration Observations

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Filter Wheel Closed Observations

Regular calibration observations are needed for sensitive tracking of variations in the quiescent particle background. As the CCDs age this is likely to become more important. Anomalous states are perhaps becoming more prevalent.

FWC Data: Currently there are 700-1000 ks of data for the CCDs in their standard states. However, very little data from the last year.

For most chips which have anomalous states they are detectable in corner data, therefore they can be tracked in normal observations (on or off).

Anonymous States

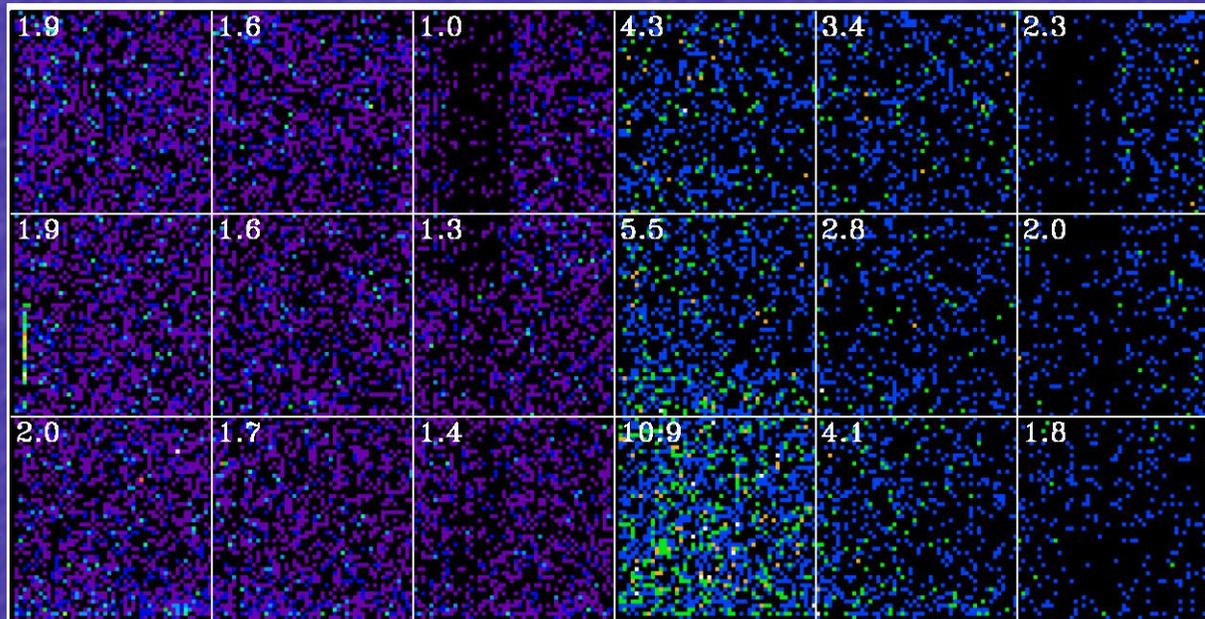
However, some anomalous states are not detectable in corner data (known as an anonymous anomalous state). This has been identified in MOS1-4 and may occur in others

Therefore there is a need for regular short FWC exposures to detect anonymous states.

They occur primarily for $E < 1.0$ keV, and the MOS1-4 anonymous state strongly effects $\sim 1/9$ th of the chip.

Typical FWC rates in the 0.3-1.0 keV band are 1-2 counts ks^{-1} in one ninth of a CCD. Anomalous states have count rates of ~ 10 counts ks^{-1} for the same area

MOS1-4 Anonymous State



Images from MOS1-4 in 0.3-1.0 keV in the anonymous anomalous state. Values are the counts ks^{-1} for one ninth of the CCD

Monthly FWC exposures of 10ks would produce 20 counts for each CCD ninth, enough for some tracking of the state and sufficient to produce 2160 counts/chip/year (enough for spectral analysis) in the standard state