
SSM On-board Position Calibration

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Calibration Function

$$V_L = A_L \times Q_L = A_L \times Q \times \frac{I_R + x_0}{I_L + I_R}$$

$$R = \frac{V_L - V_R}{V_L + V_R}$$

$$V_R = A_R \times Q_R = A_R \times Q \times \frac{I_L - x_0}{I_L + I_R} \quad x_0 = \frac{R(A_R I_L + A_L I_R) + (A_R I_L - A_L I_R)}{R(A_R - A_L) + (A_R + A_L)}$$

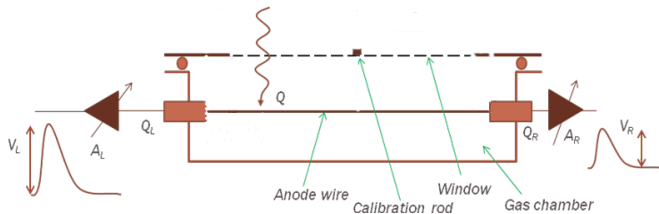


Figure 1: Schematic diagram of an anode wire

- Crab not occulted by Earth
- Satellite not in SAA
- Earth is not in the FOV
- Energy between 2.5keV to 10keV
- Lower particle background
- Attitude Jitter

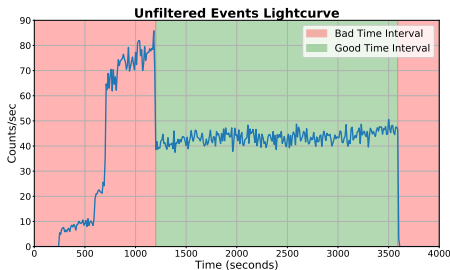


Figure 2: Good Time Interval (GTI) selection

- The mask plate dimensions including inter-pattern gaps, plate thickness, & the six different patterns,
- The detector module with individual anode placements in respective wire-cells,
- The window and the window support rods,
- calibration wire

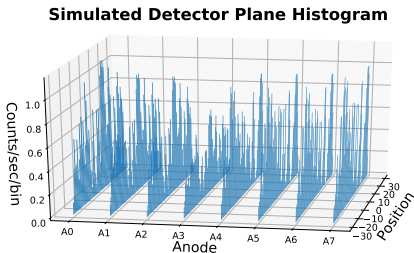


Figure 3: Each anode wire of 60mm length divided into 63 bins.

- The mask plate dimensions including inter-pattern gaps, plate thickness, & the six different patterns,
- The detector module with individual anode placements in respective wire-cells,
- The window and the window support rods,
- calibration wire

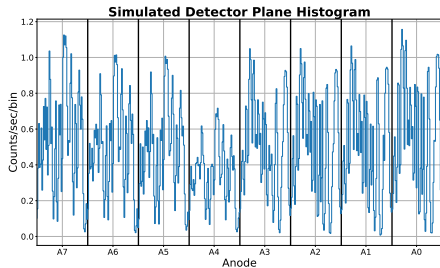


Figure 4: Each anode wire of 60mm length divided into 63 bins.

Comparison of Observed Calibration Data with Simulated Data (A0)

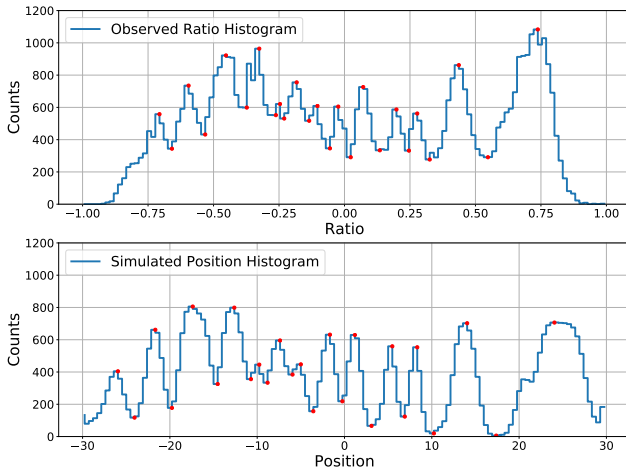


Figure 5: Comparison between observed ratio histogram and simulated position histogram

$$x_0 = \frac{R(A_{R/L} + A_{L/R}) + (A_{R/L} - A_{L/R})}{R(A_R - A_L) + (A_R + A_L)}$$

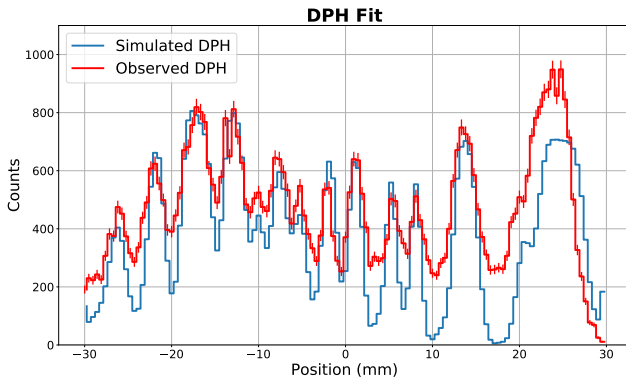


Figure 6: Comparison between observed DPH and simulated DPH

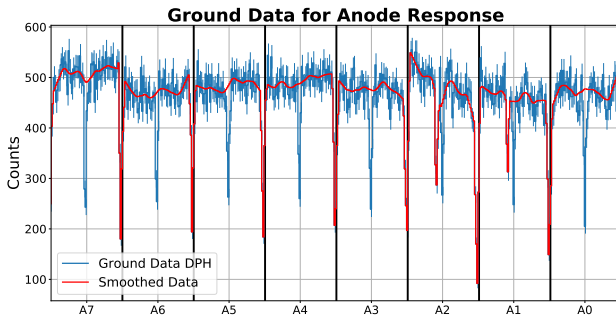


Figure 7: Ground Data DPH used to derive anode response

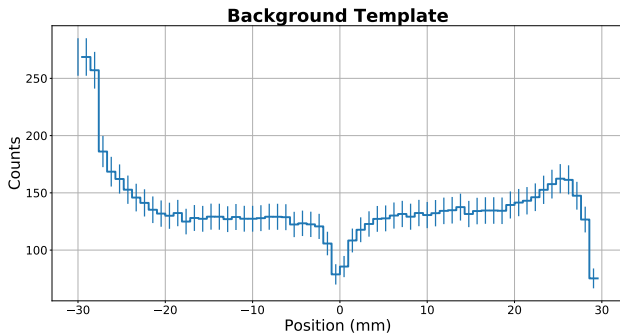


Figure 8: Background template generated based on observed VCR during calibration observation.

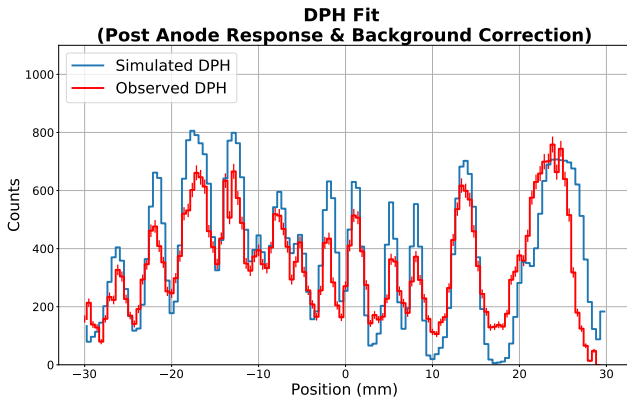


Figure 9: Comparison between observed DPH and simulated DPH