

# **EPIC constraints on RGS calibration**

**Andy Pollock  
RGS Calibration Scientist**

**EPIC BOC @ Leicester**

**7 March 2011**

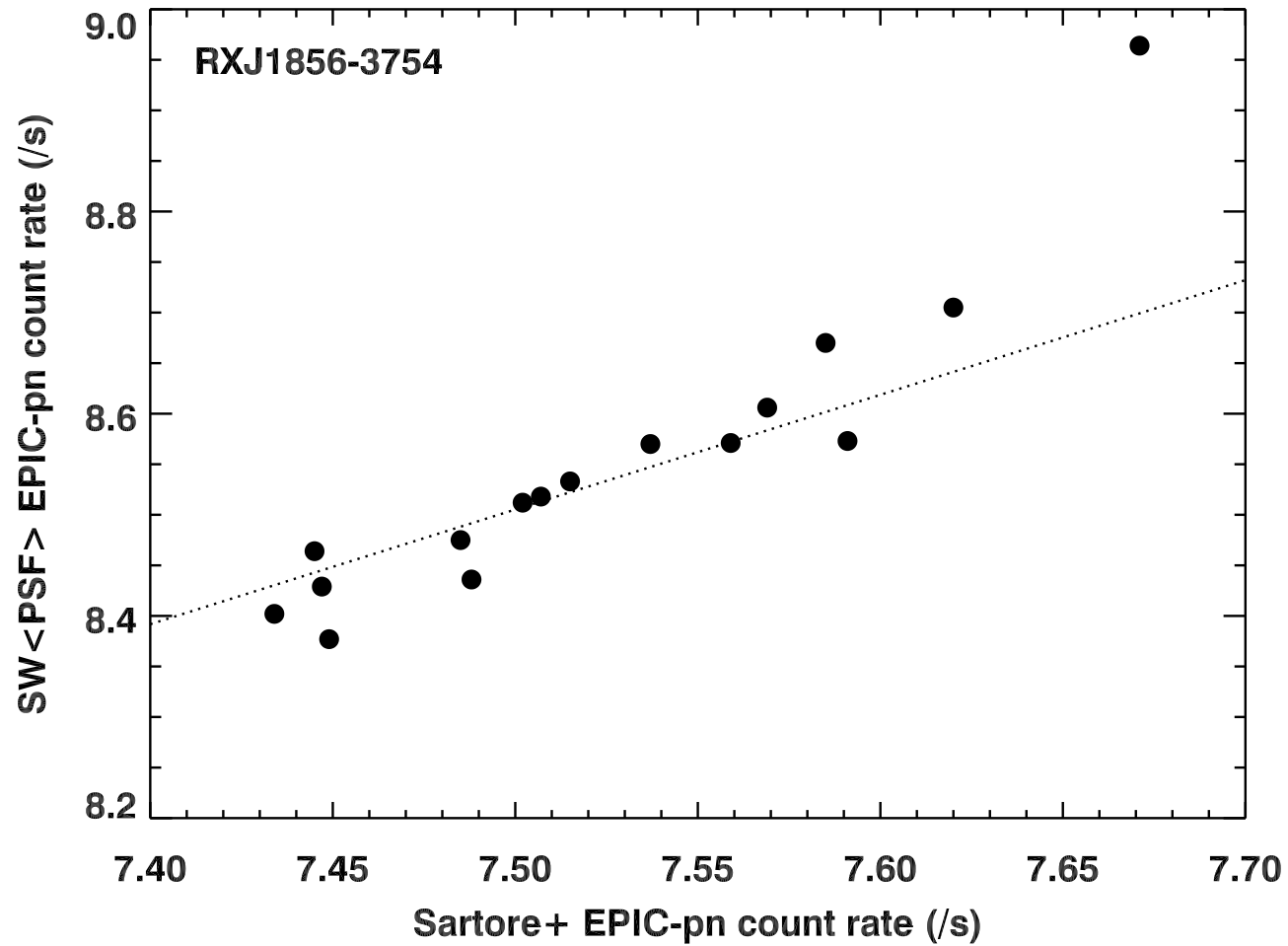
**RGS@SRON(NL) : Jelle Kaastra, Jan-Willem den Herder, Cor de Vries, Ton Raassen, Frits Paerels (Columbia)  
IDT@ESAC(E) : Carlos Gabriel, Charo González-Riestra, Aitor Ibarra, Ricardo Pérez, Andy Pollock**

# EPIC-RGS cross calibration ( $\Delta \sim 3\%$ )

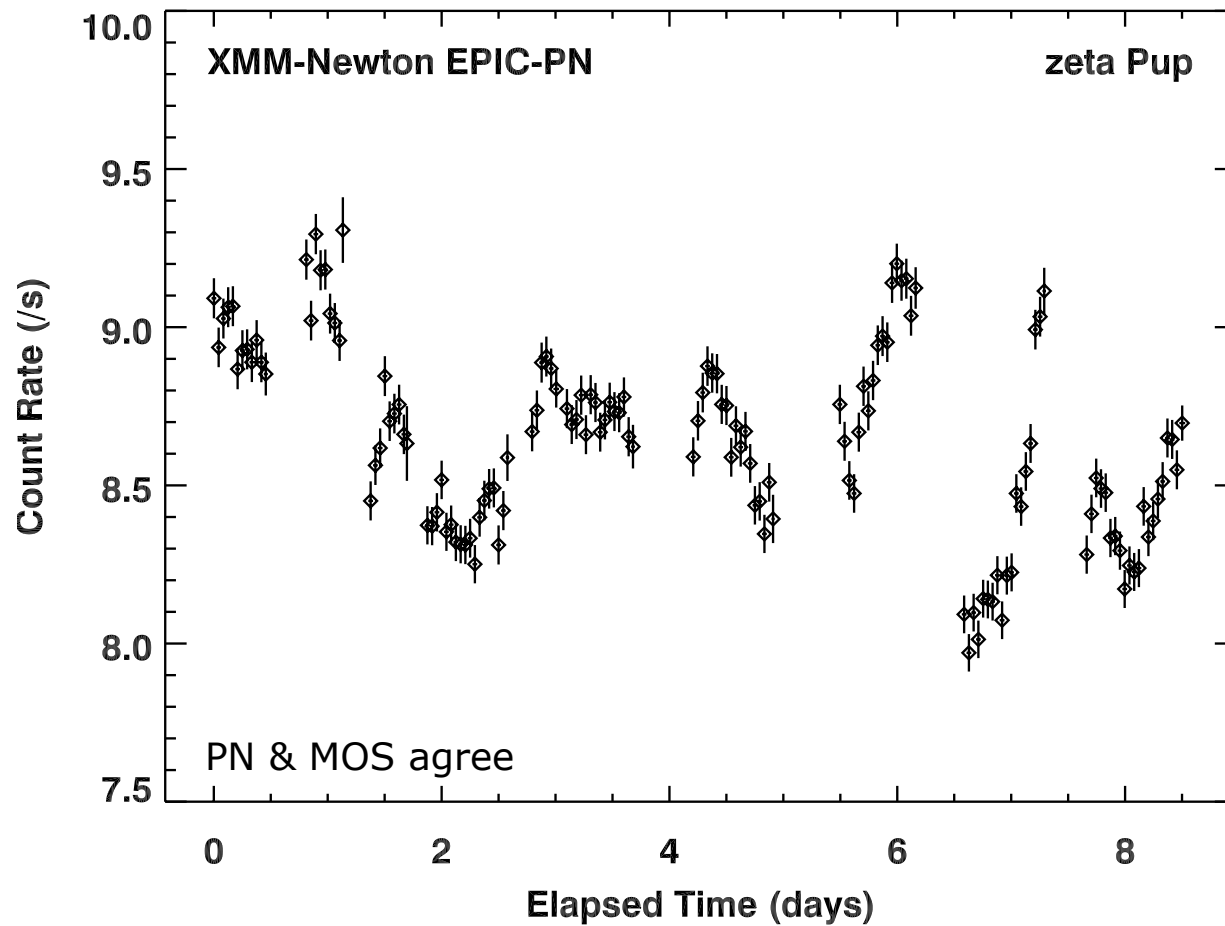


- Assumption underlying the RGS contamination model
  - Pure carbon  $\Delta N_C \rightarrow (\Delta f_X/f_X)_{\text{RXJ1856-3754}}$
- RXJ1856-3754 EPIC-pn is variable
  - $\Delta N/N = 0.0456\%$  in 640ks
  - $\Delta N/N < 1\%$  in 1 hour
  - cf Sartore+ & TN-0096
    - $\Delta f_X < 3\% \parallel \Delta r_X < 1.5\%$
- Complementary spatial methods
  - PSF models of the whole pn Small Window
- Short-term variability
  - EPIC-pn vs other instruments
- EPIC-pn SW stability from bright extended SNRs
  - 1E0102-7219  $\Delta \text{pn} < 0.5\%$
- RGS wish list for EPIC analysis

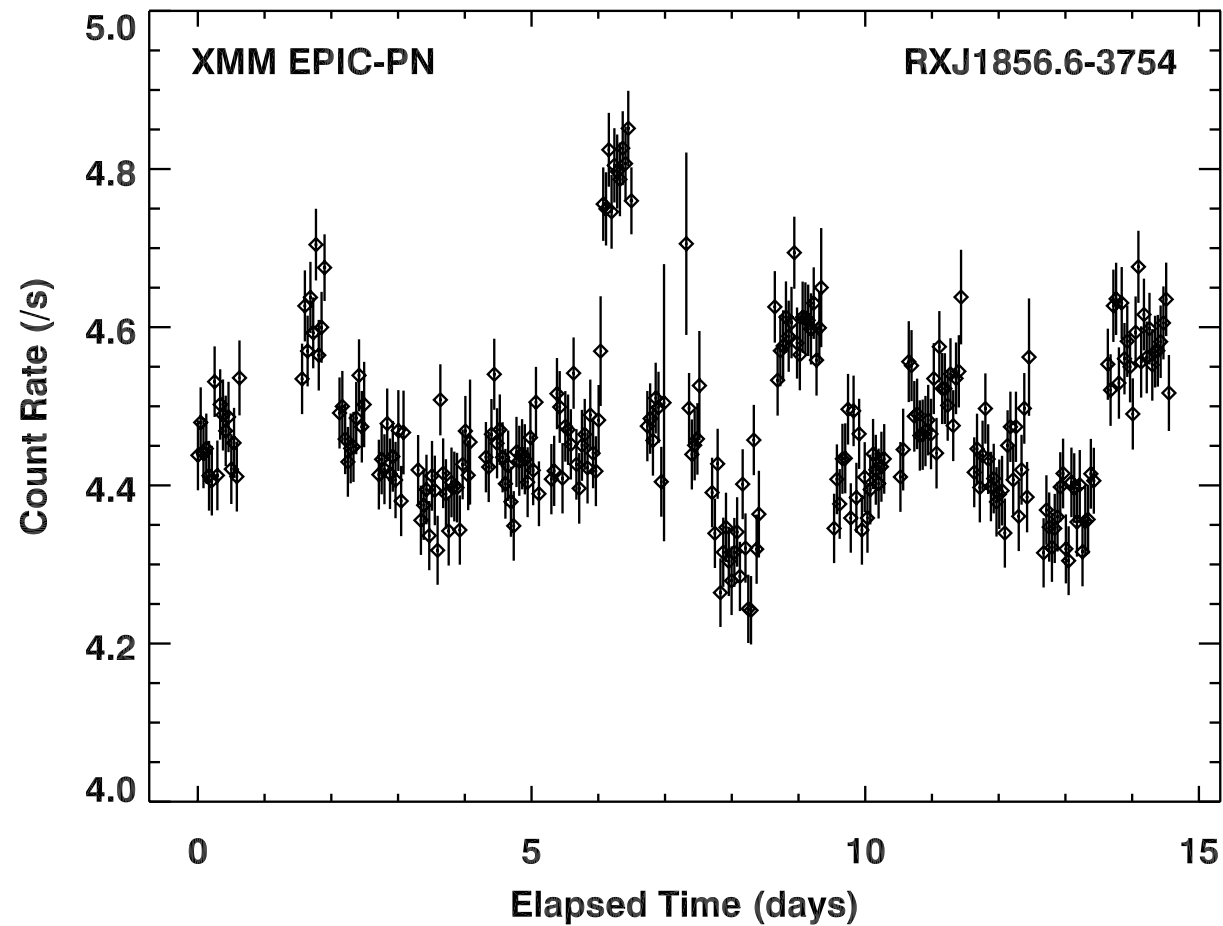
# PSF vs PHA count rates for RXJ1856-3754



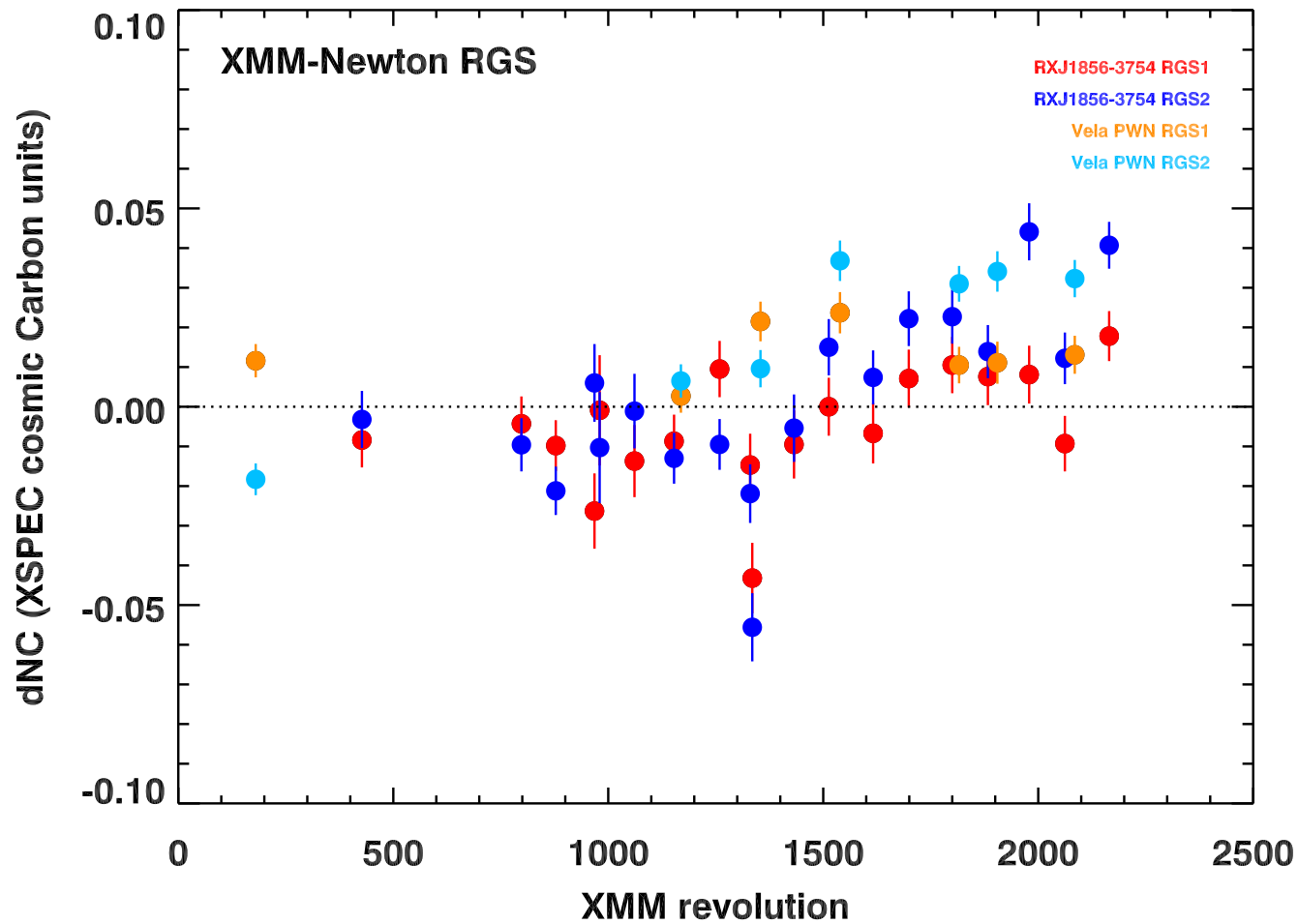
# SW<PSF> count rates for zeta Puppis



# SW<PSF> count rates for RXJ 1856-3754



# Constant sources for RGS contamination



- XMM calibration targets in the refereed literature
  - Recent examples
    - RXJ1856-3754 (Sartore+ 2012)
    - $\zeta$  Puppis (Nazé+ 2011, 2012)
  - Should be our job
    - Objective: 1 paper per RCP target
- RXJ1856-3754 wish list (as discussed with Matteo)
  - S(RAWX,RAWY)
  - S(gain)
    - $N_i/\Sigma N_i = 3.4\%$  in 2062\_0412601301 SW 5eV PI `pattern==0` histogram
  - “Best” SW PSF
  - MHO about its variability
    - **0% is excluded**
    - $\pm 1\%$  is about the right answer
      - RGS and XMM need to know