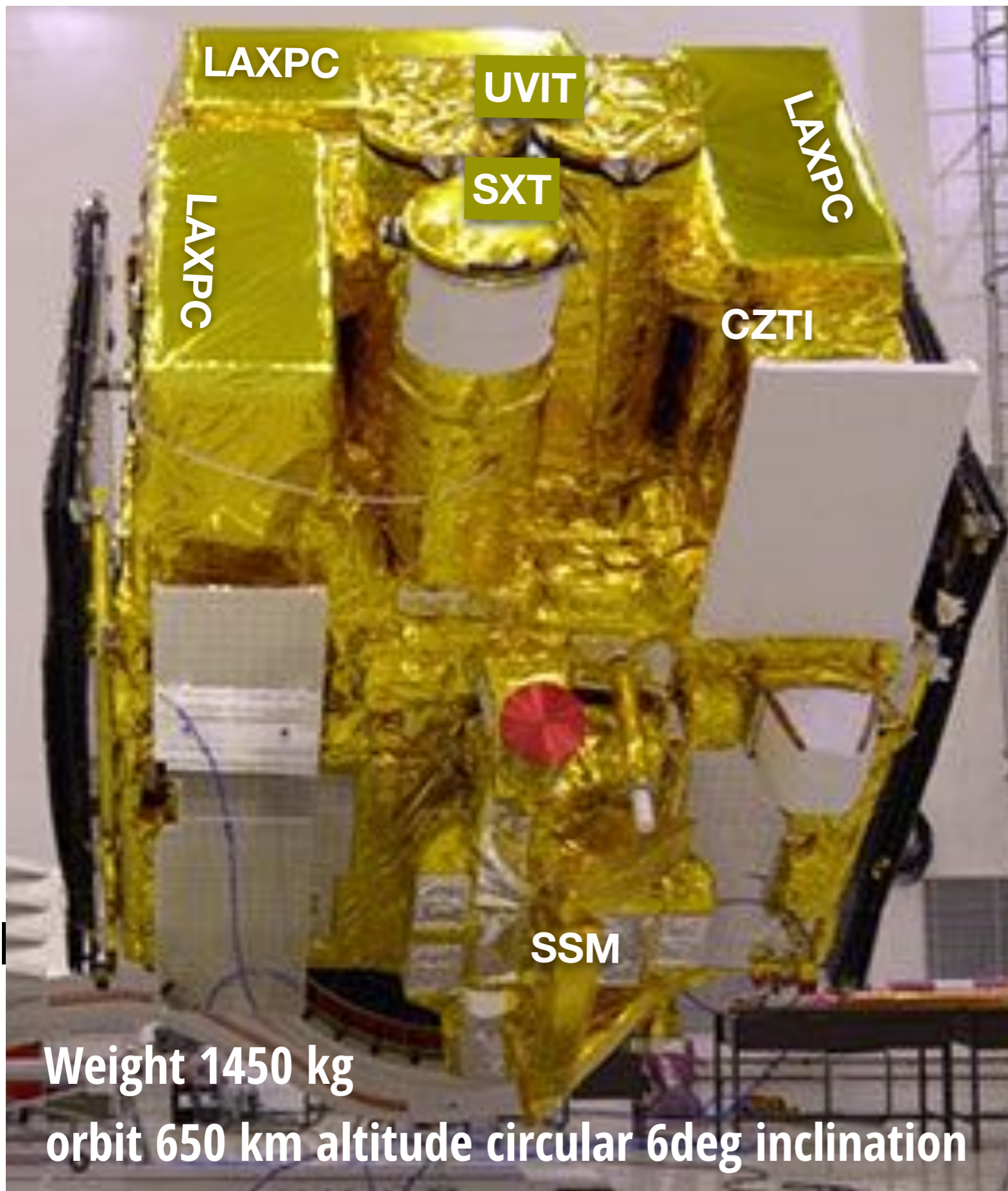


ASTROSAT

mission status

Dipankar Bhattacharya
IUCAA, Pune



AstroSat instruments

UVIT VIS: 320-550 nm
UVIT NUV: 200-300 nm
UVIT FUV: 130-180 nm

SXT: 0.3 - 8 keV

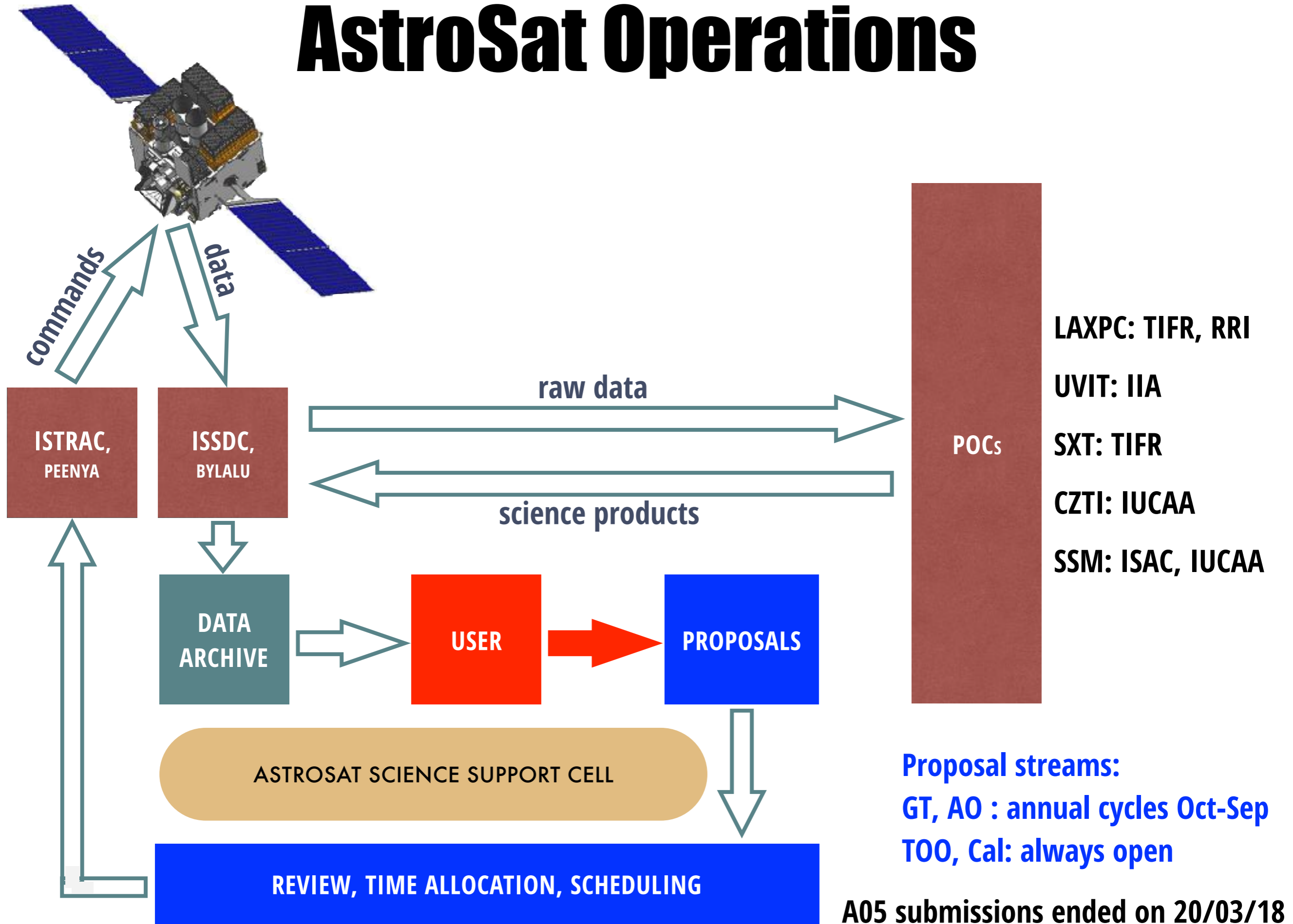
LAXPC (3 units): 3 - 80 keV

CZTI: 30 - 150 keV coded
(up to 380 keV open)

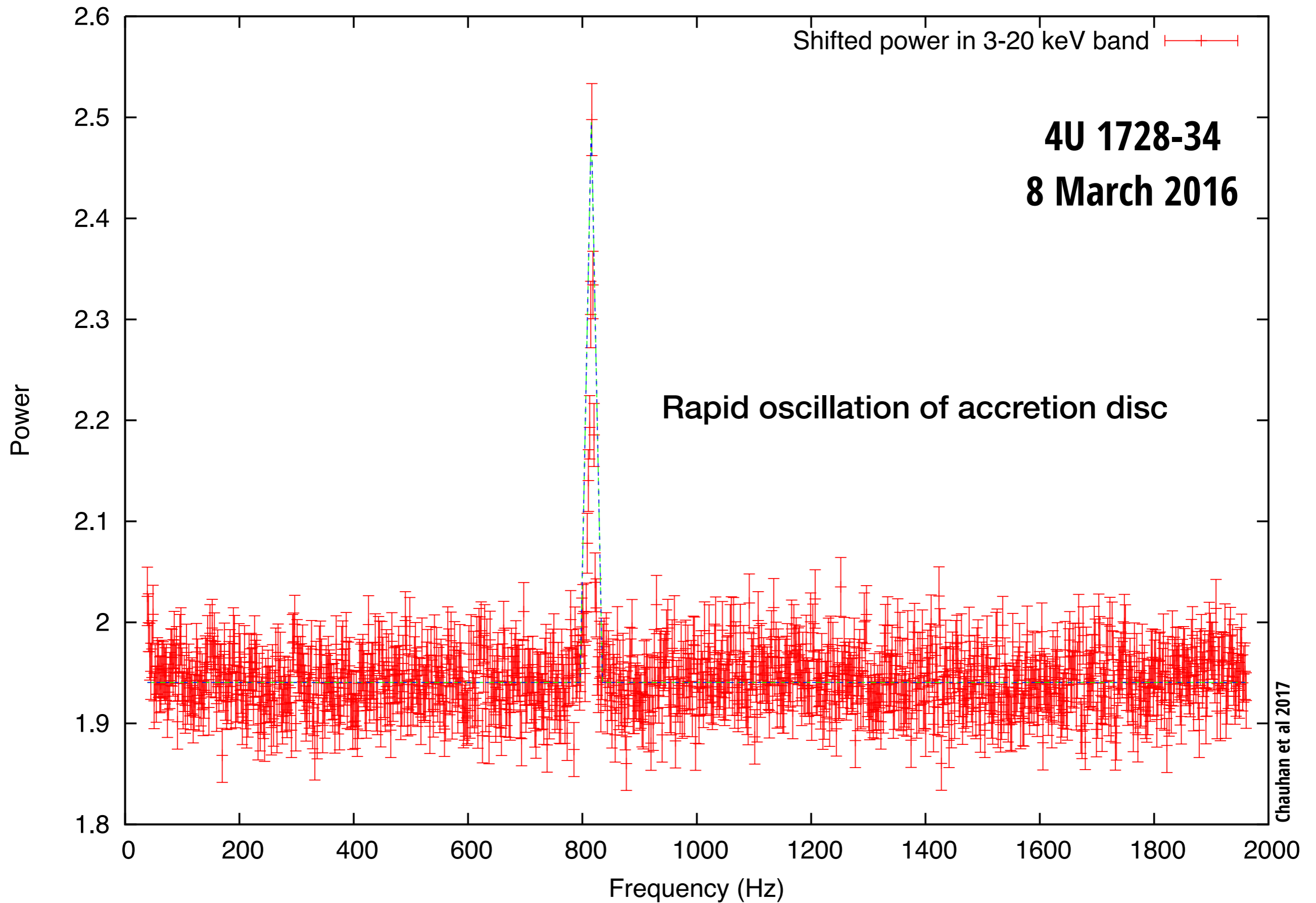
SSM (3 cameras): 2-10 keV

Launched 28 Sep 2015

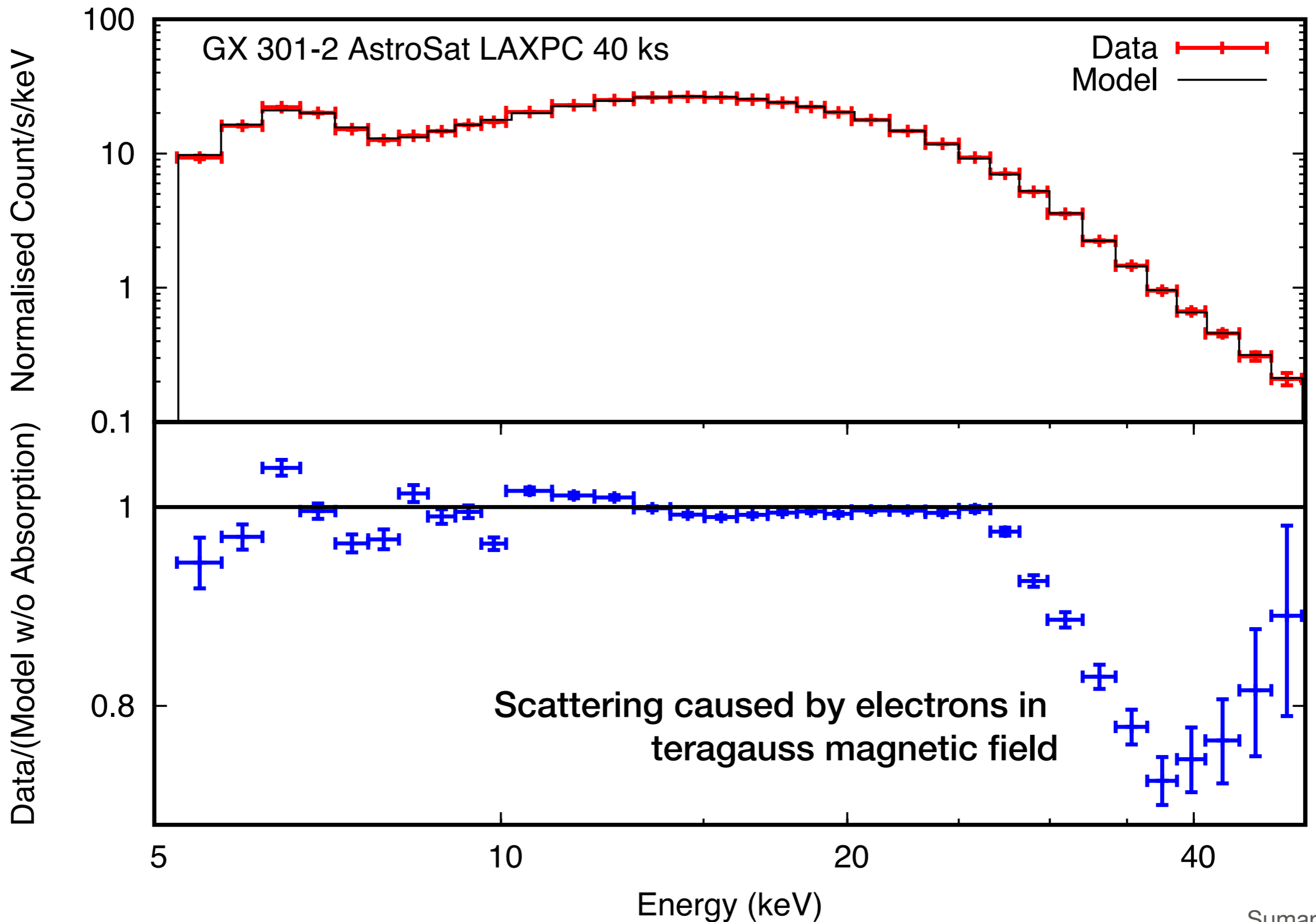
AstroSat Operations



kHz QPO detection by LAXPC

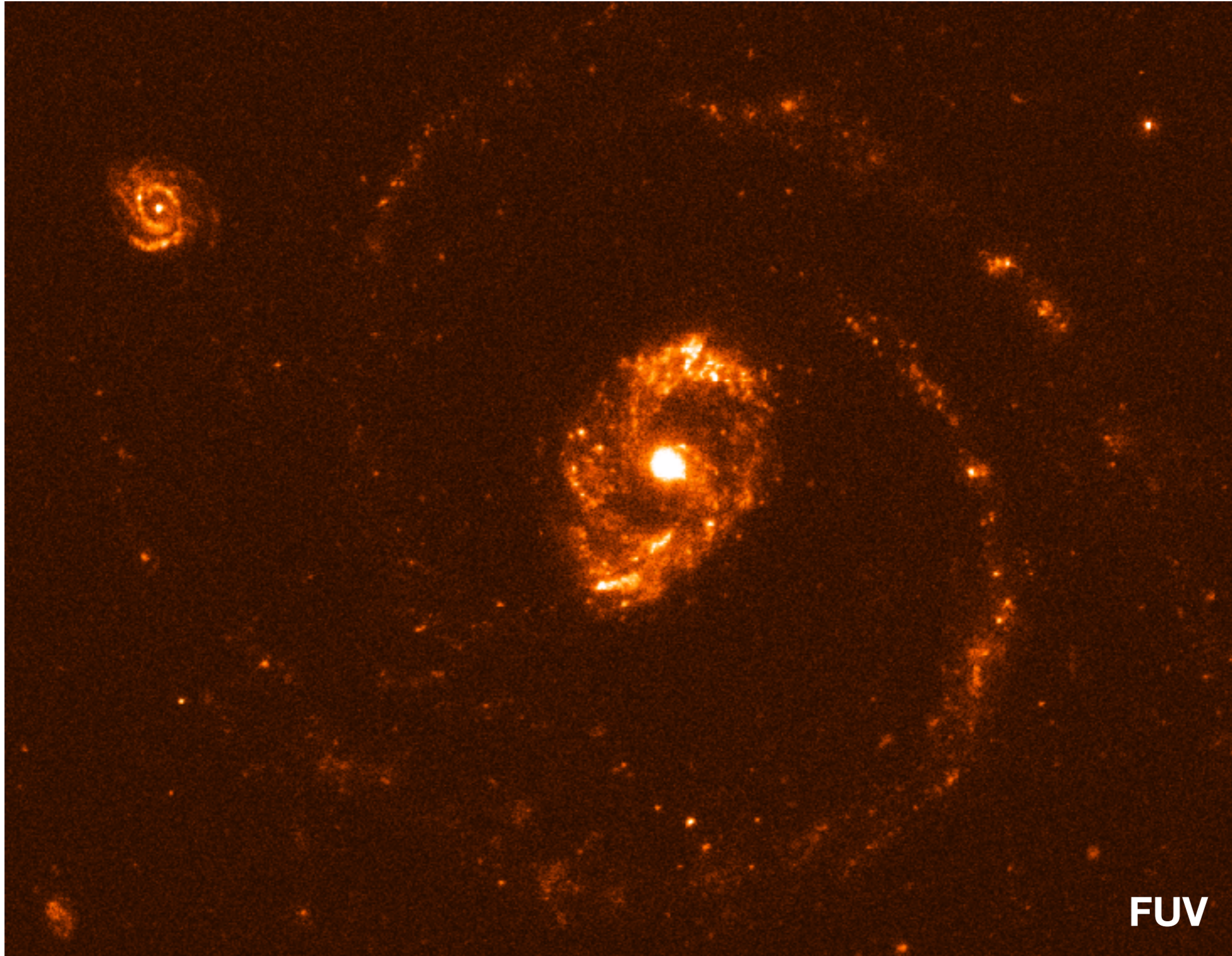


Cyclotron Resonance



NGC 4151

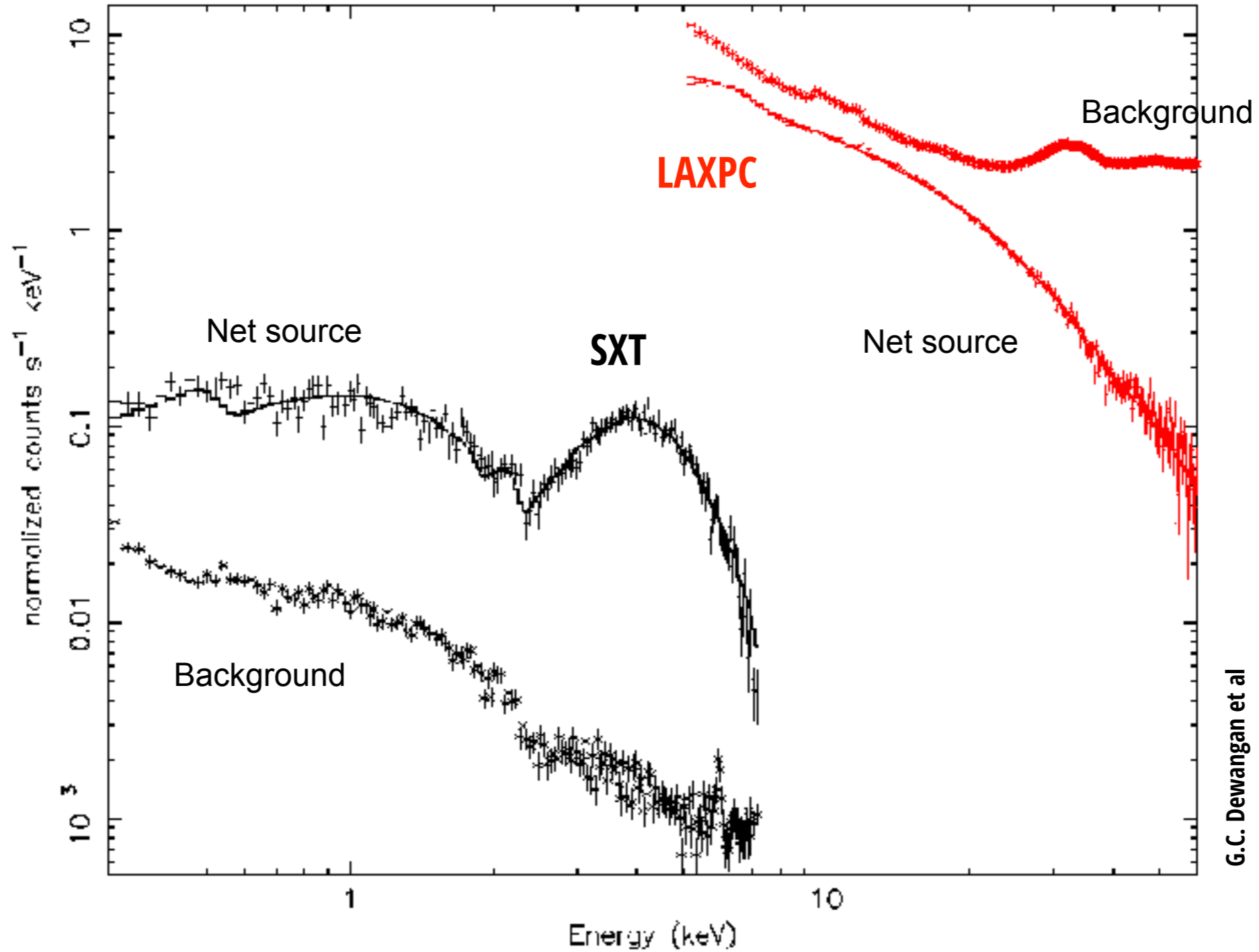
Seyfert galaxy



NGC 4151

Seyfert galaxy

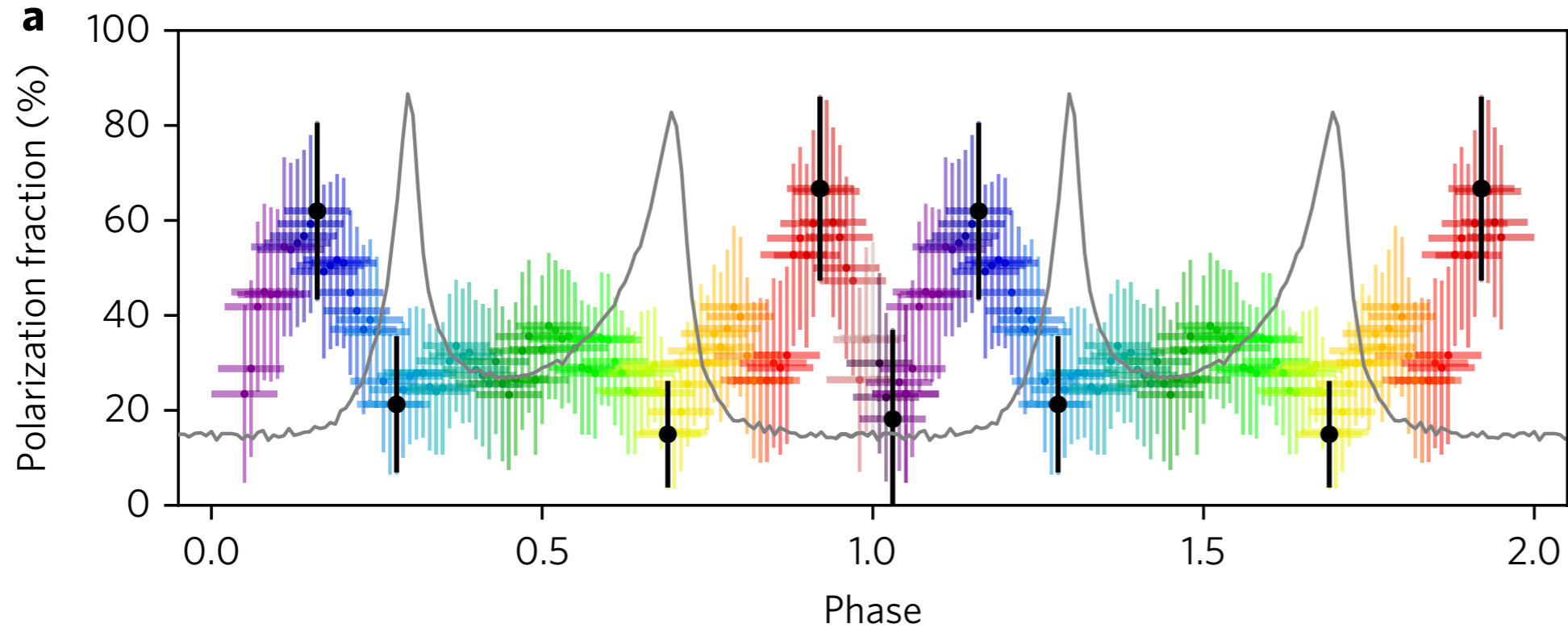
data and folded model



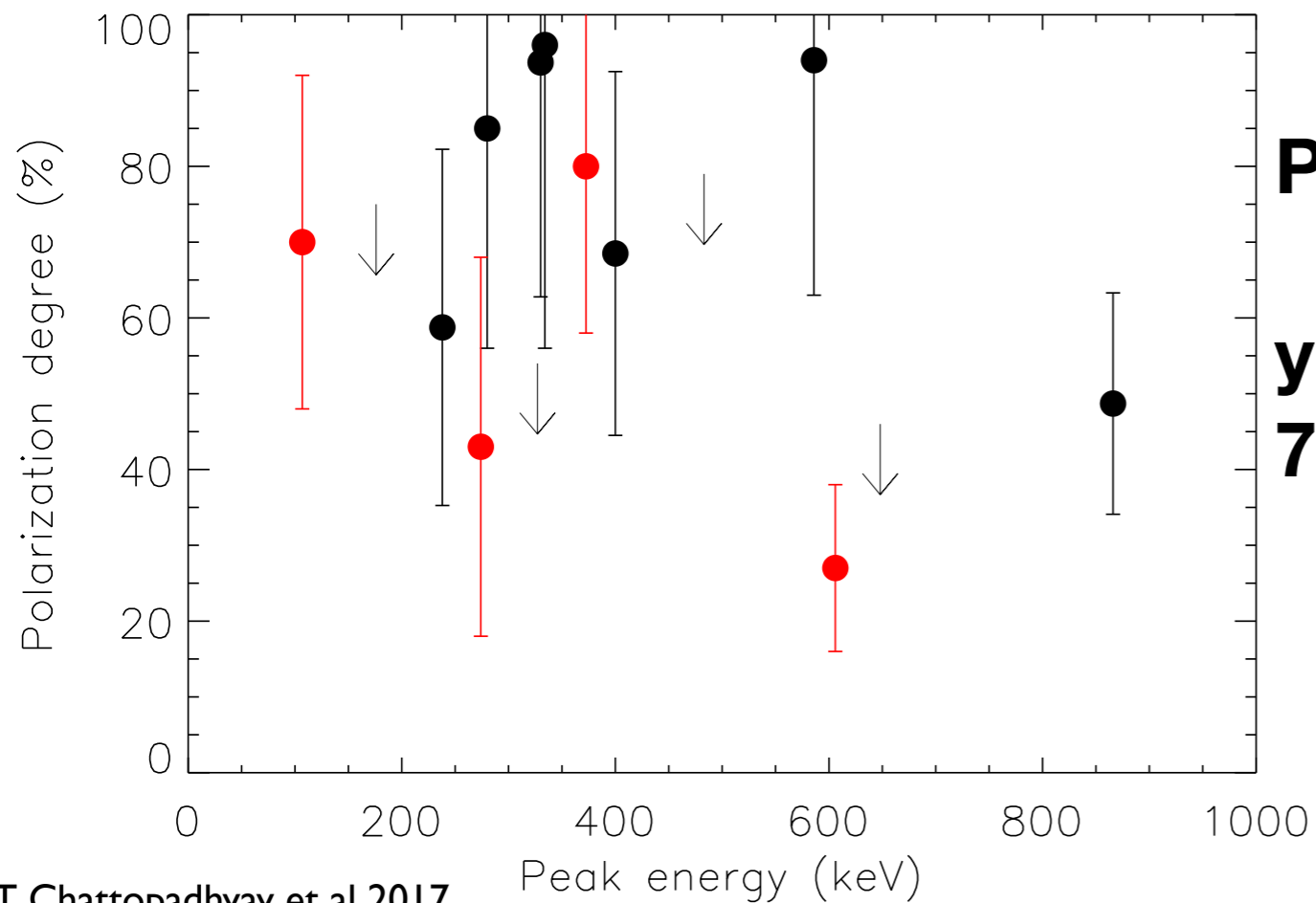
G.C. Dewangan et al

CZTI

Polarisation of the Crab Pulsar



S. Vadawale et al
Nature Astronomy 06 Jan 2018



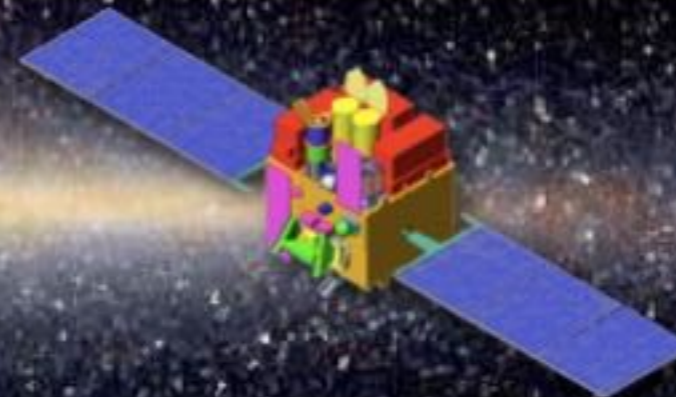
Polarisation of Gamma Ray Bursts

**year 1 sample:
7 detections, 4 upper limits**

100-380 keV

ASTROSAT

Cadmium Zinc Telluride Imager



[Home](#) | [CZTI Design Details](#) | [CZTI Calibration](#) | [CZTI Test & Evaluation](#) | [Documents](#) | [Contacts](#) | [Software and Data](#) | [Data Quality Report](#)

[CZTI GRB page](#)

User login

Username *

Password *

[Create new account](#)
[Request new password](#)

CZTI GRB monitor page

Astrosat CZTI GRB Archive

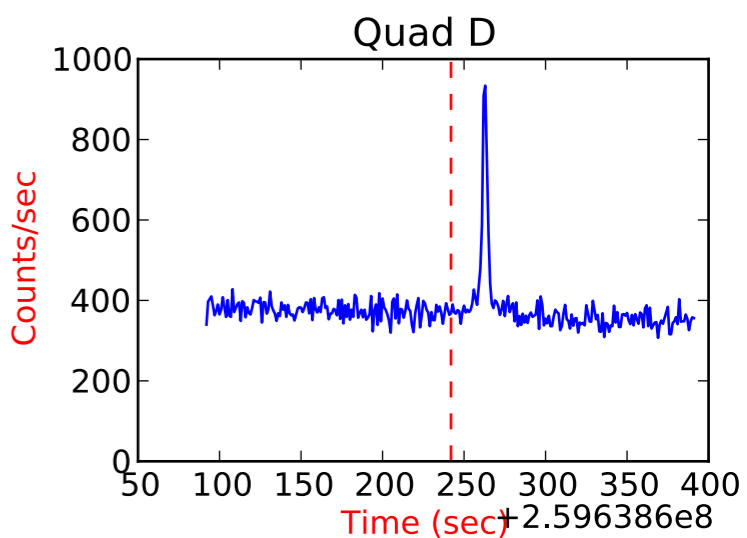
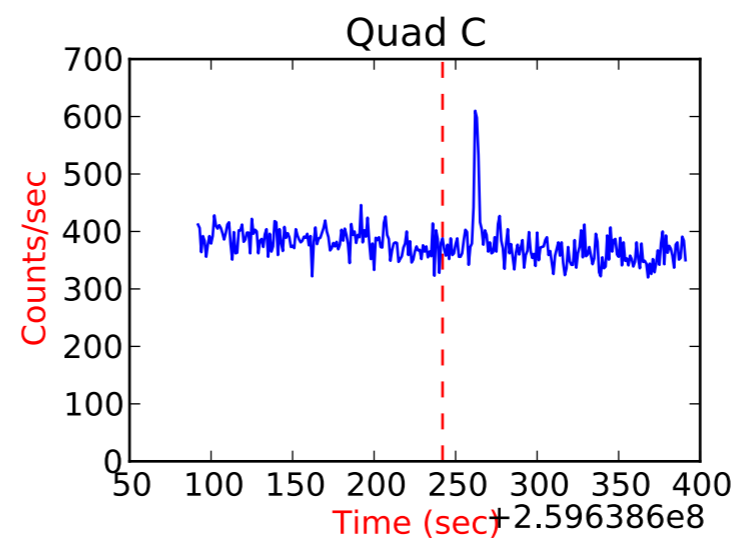
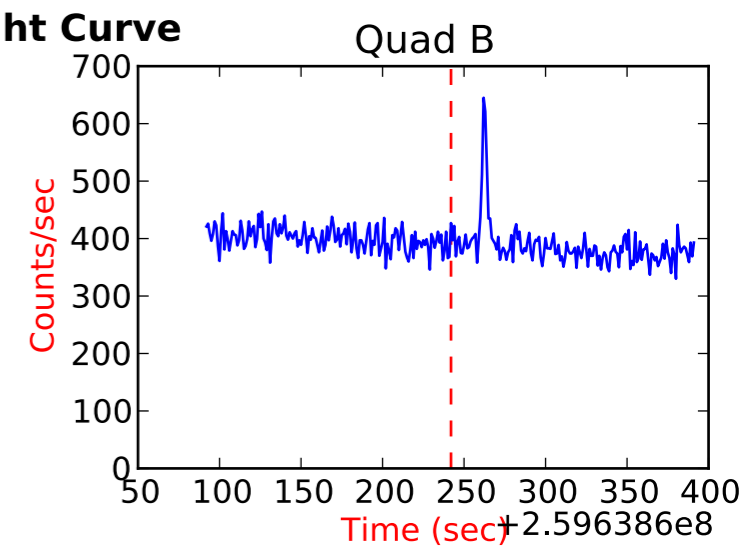
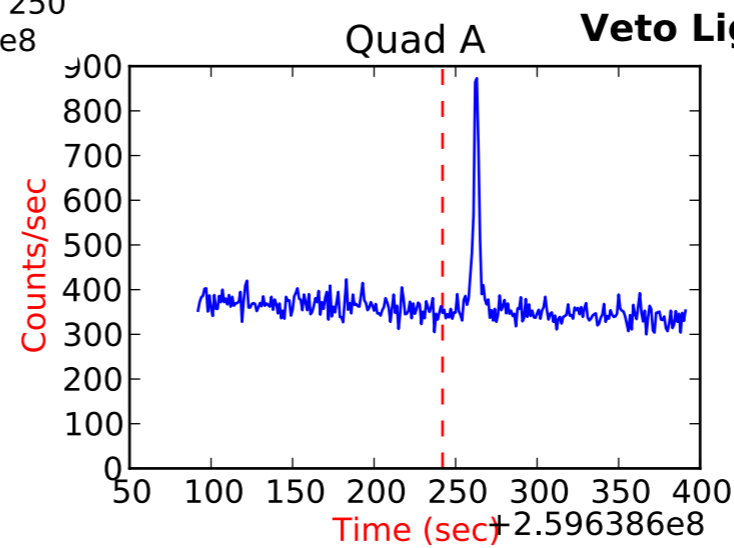
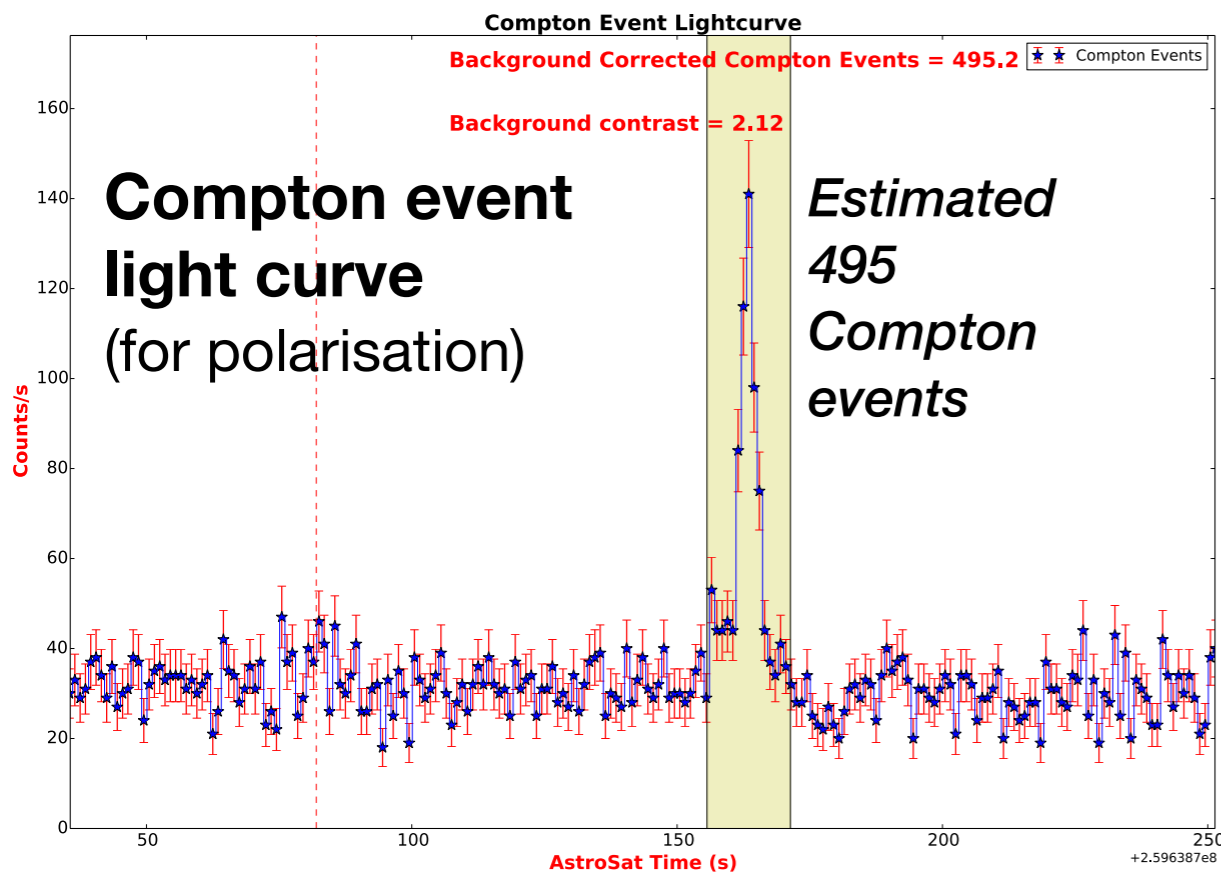
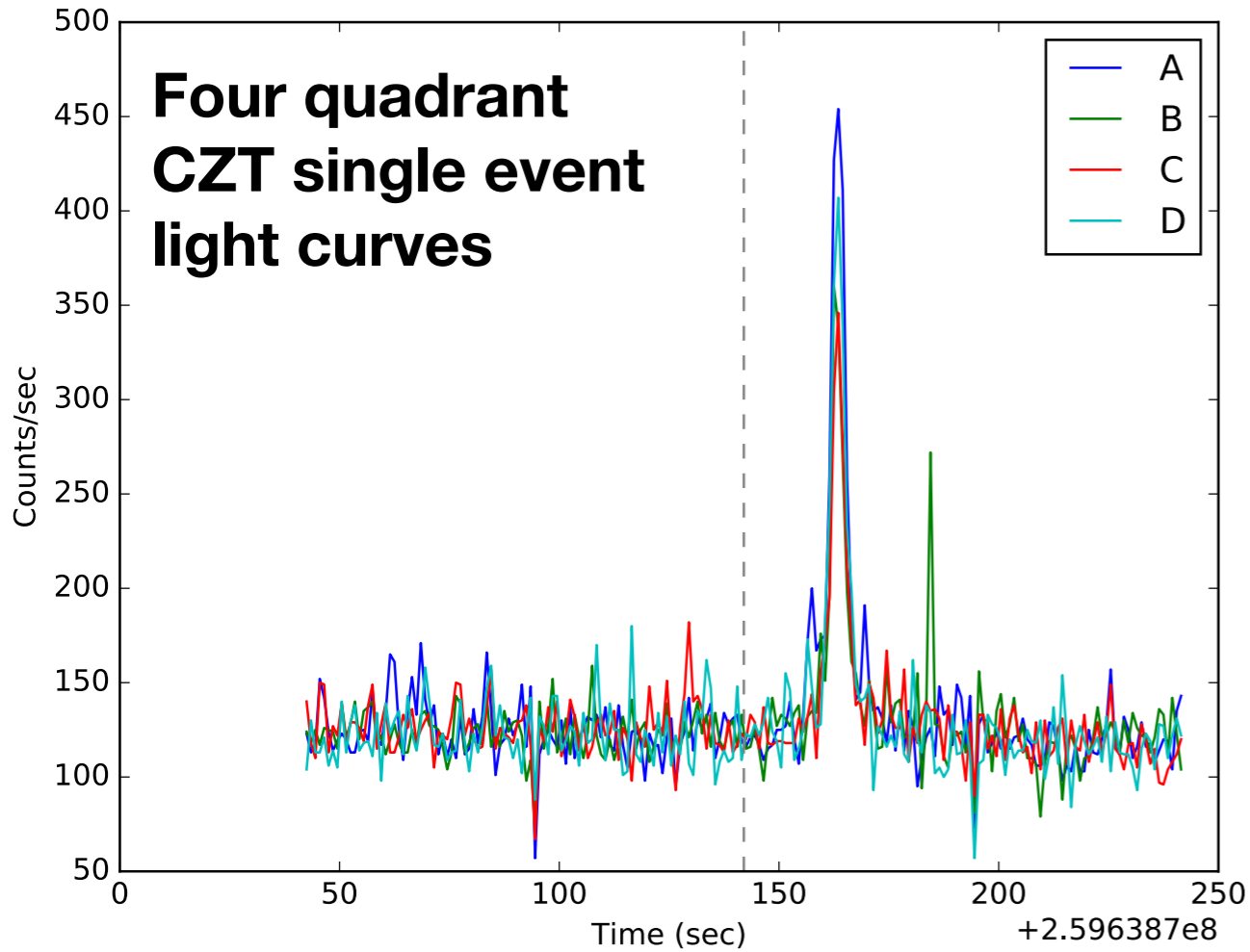
| GRB Name | Trigger time Astrosat seconds | RA, Dec deg | theta, phi deg | T90 sec | Links |
|------------|----------------------------------|----------------------|-------------------|------------|---|
| GRB180326A | 259730767.0 | -- | -- | | Veto_lightcurve |
| GRB180325A | 259638782.0 | 157.42735, +24.46361 | -73.36, -25.97 | 15.7 | CZTI_lightcurves Veto_lightcurve Compton_lightcurve |
| GRB180324A | 259562229.0 | 76.585, +56.725 | 138.31, 185.68 | | Veto_lightcurve |
| GRB180314A | 258684211.0 | 99.26522, -24.49627 | 26.78, 124.24 | 37.3 | CZTI_lightcurves Veto_lightcurve |
| GRB180305A | 257937968.66 | 49.61821, 32.10994 | 104.38, 79.57 | 8.9 | CZTI_lightcurves |

CZTI: GRB detections regularly reported on CZTI GRB monitor webpage and in GCN

Report example: GRB 180325A

Posted on
CZTI GRB Monitor
web page

<http://astrosat.iucaa.in/czti/?q=grb>





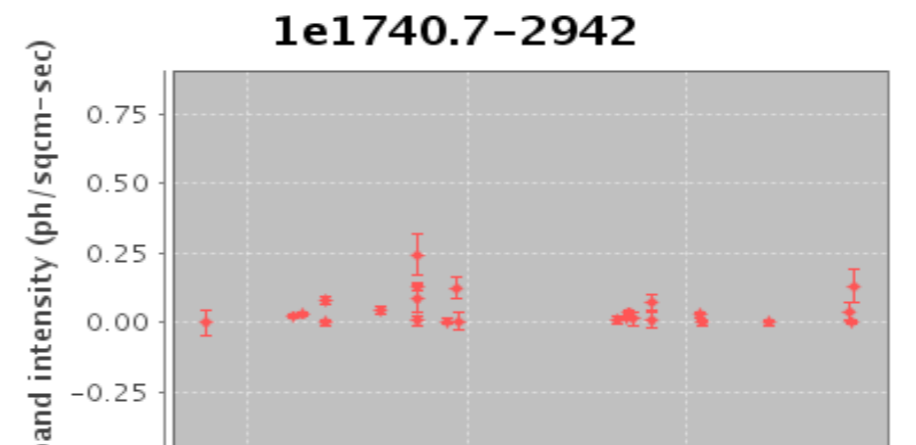
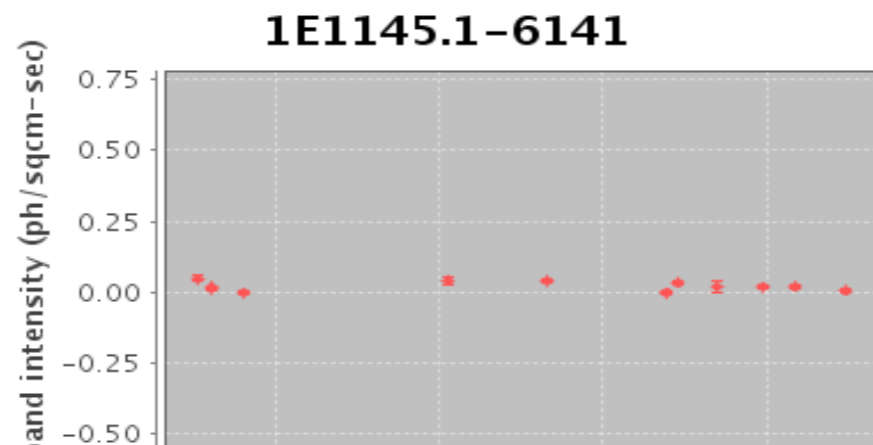
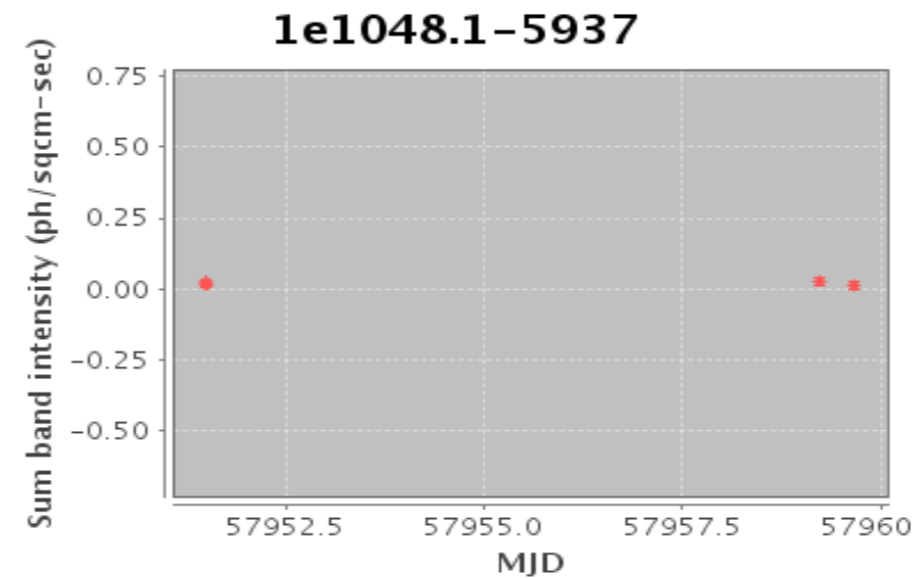
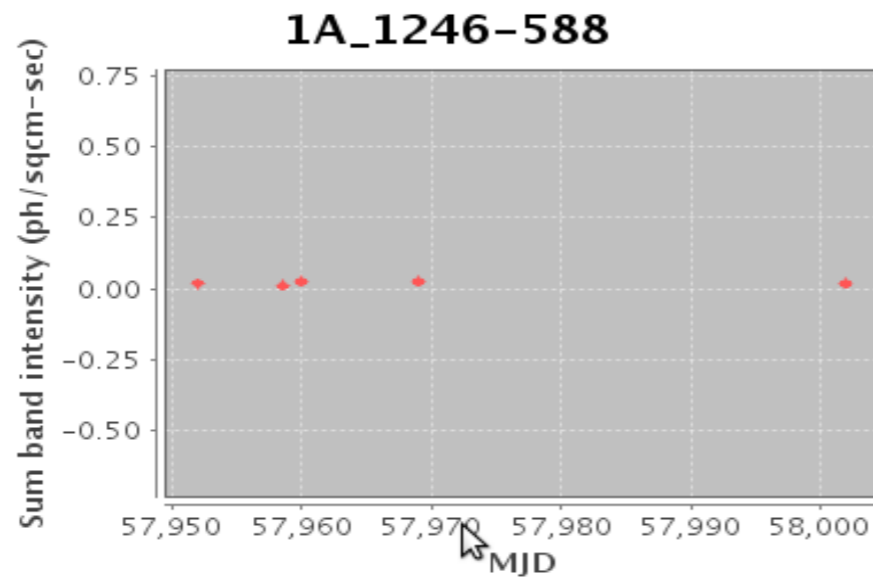
Scanning Sky Monitor

An X-ray sky monitor on board ASTROSAT

Welcome, Guest [Login / Register](#)

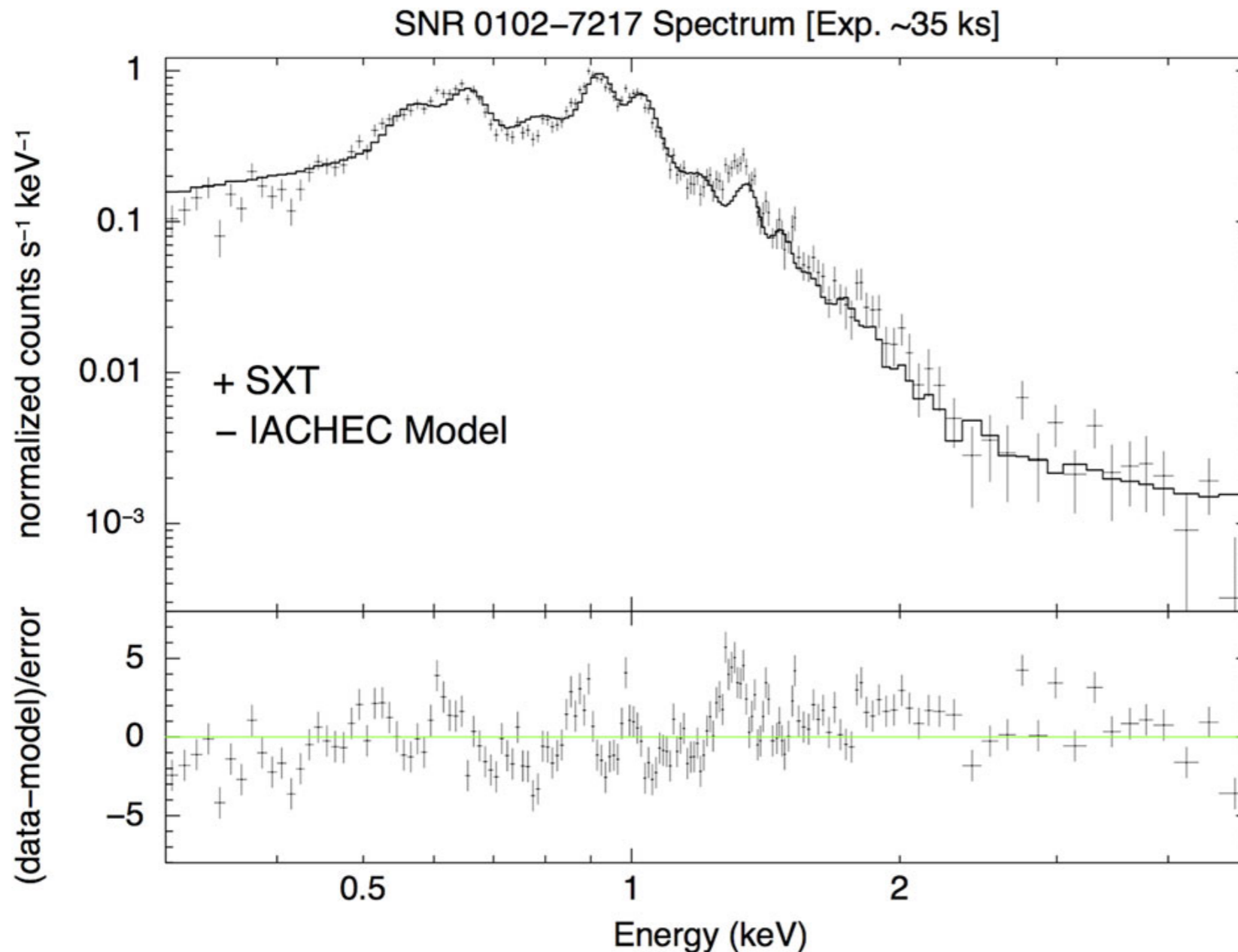
[Home](#) [Source Catalog](#) [Light Curves](#) [Downloads](#) [Alerts](#) [Contact](#)

Light Curves for category - all
Total no. of light curves - 290



SSM: Light curves of monitored sources are being made available on the web
Flux calibration and background require improvement
Automated transient search not yet active

SXT:



**Spectral calibration
with 1E0102-7217
IACHEC model**

**No contamination effect
reported yet**

**Fainter systematic
features (e.g. gold
lines from optics)
seen only in bright
sources - Modelled
using Crab spectrum**

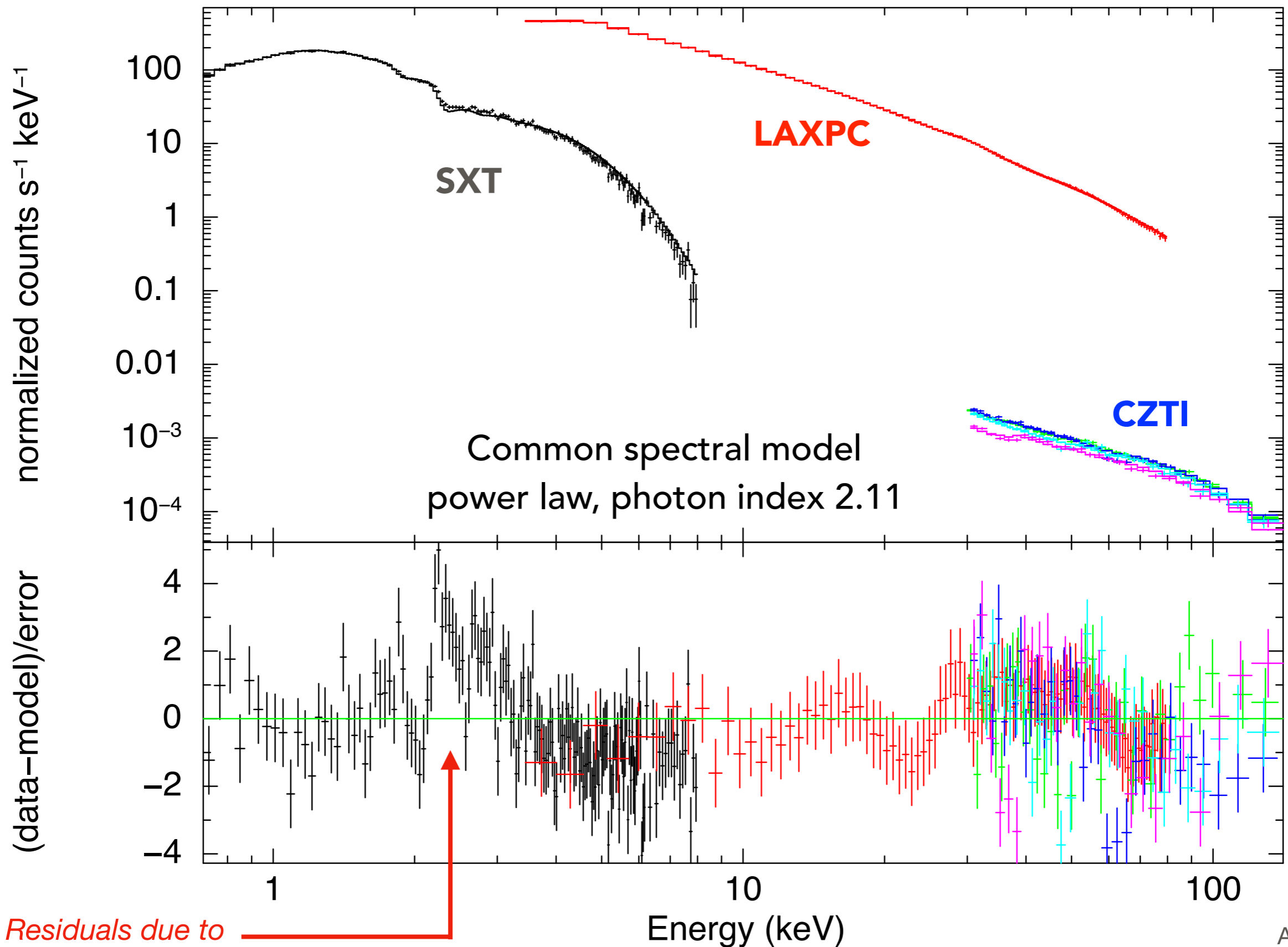
LAXPC, CZTI:

Crab main calibrator. Used coordinated IACHEC observations.

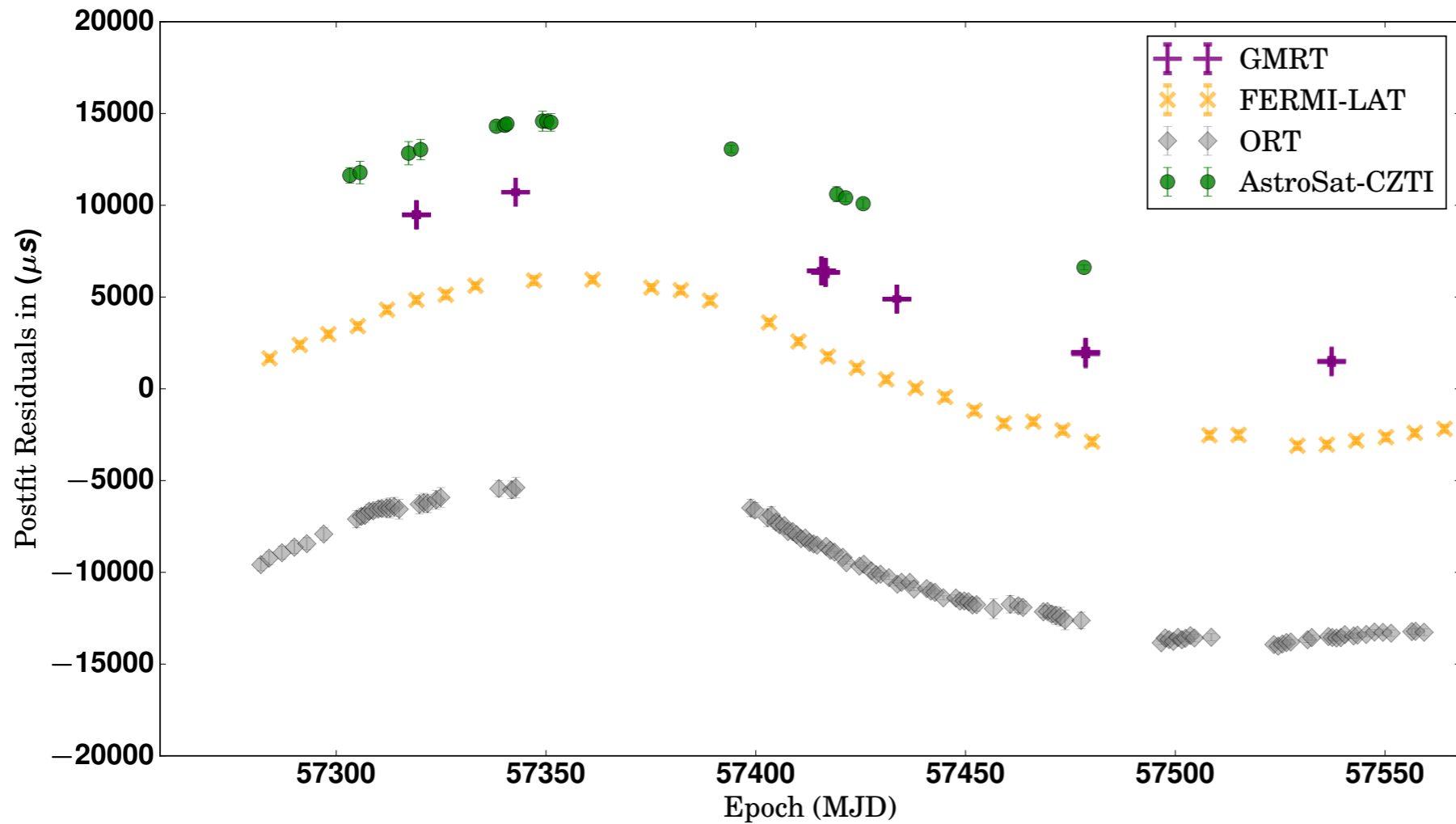
Current systematics LAXPC: Response 2%, Background 3%

CZTI : Response 1% in bg-subtracted (mask-weighted) spectrum

Broadband X-ray Spectroscopy: Crab Nebula

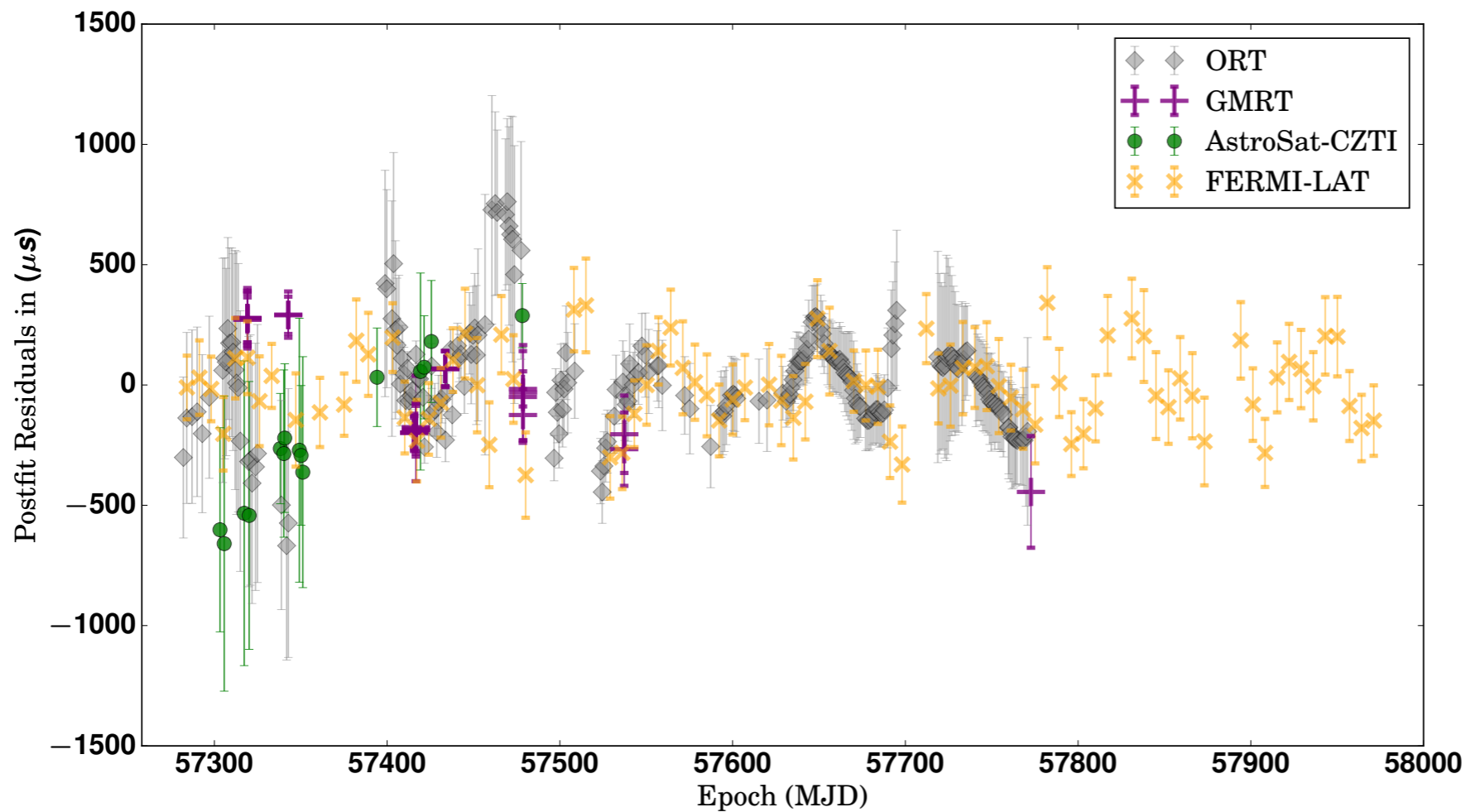


Residuals due to gold edge. Addressed in recent modelling.

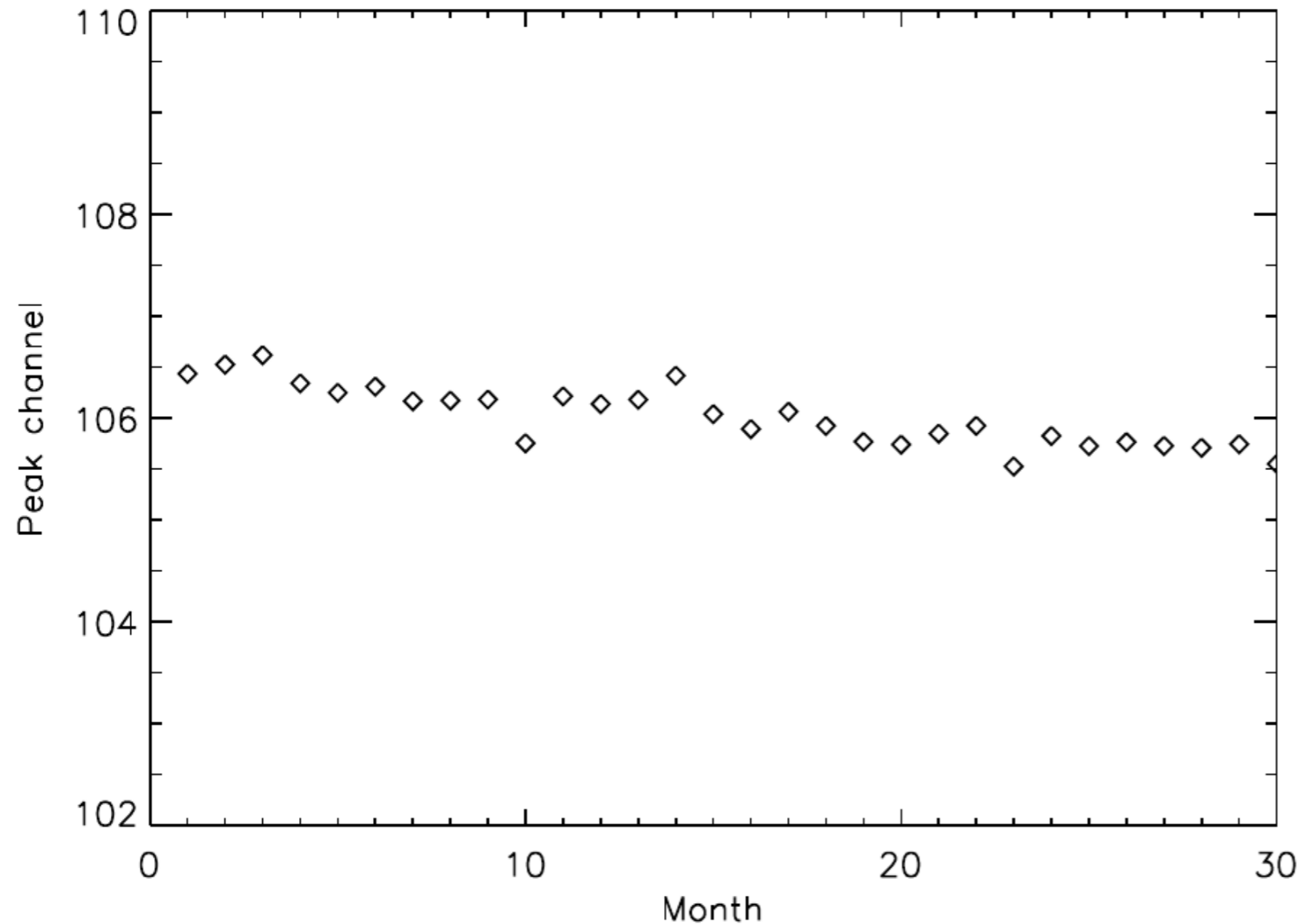


Absolute Time calibration with Crab pulsar

CZTI - Fermi - Radio



Secular trend seen in CZTI



**Reduction of gain:
0.5 keV at 60 keV in 30 months**

~20% of CZTI pixels were found to have ~3x reduced gain immediately after launch. No new pixel has developed this since.

Also slow reduction of Crab norm is indicated

Gradual rise in noisy pixels (which are then disabled): rise by < 1% in the last 2 years

AstroSat mission status

**Nearly 2.5 years in orbit, 13600 revolutions,
1000 individual pointings, ToOs being executed
more frequently now**

UVIT: Recurring issues with NUV control electronics
- monthly reset being executed
- twice have gone into hibernation, latest after
the reset on 20 March. Recovery attempts
currently ongoing.

FUV and VIS channels functioning normally

LAXPC: Unit 3 had gas leak. Switched off on 8 March 2018
Unit 1 showed anomalous counts since 26 March 2018
operating with reduced HV since 29 March 2018

SSM: Operating with two cameras, the third had gas leak

Ongoing payload/cal actions

- **NUV channel recovery attempt**
- **Crab and bg observation to calibrate LAXPC with new HV**
- **Stabilisation of LAXPC-1 (widen SAA avoidance region)**
- **Analysis of recent IACHEC coordinated data**
- **Improvement of LAXPC background model and response**
- **Modelling non-uniform background on CZTI detector**
- **Cross calibration of absolute timing between all AstroSat instruments**
- **SSM flux estimate consistency improvement**
- **Online data analysis facility: SXT, CZTI**