

NON-THERMAL SNR WG REPORT

Cross-calibration using Crab

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- Update collaboration team
- Observational picture in the soft & hard band
- Status of the absolute measurements of the Crab
- Energy range cuts
- Variability and time frame for the cross-calibration
- Spectral modeling of the Crab emission
- Preliminary results of spectral fitting
- Procedure, planning, agreed protocol and actions

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Update collaboration team (Instruments, CPs)

Soft-band (>10 keV)

Chandra/LETGS? (Weisskopf) ,
XMM/EPIC-pn (Guainazzi), XMM/RGS (Kaastra?),
Suzaku/XIS (Ishida)

Intermediate band

JEM-X (Westergaard), RXTE/PCA? (Jahoda),

Hard-band (> 10 keV)

Swift/BAT (Sakamoto),
INTEGRAL/IBIS (Natalucci), INTEGRAL/SPI (Jourdain),
Suzaku/HXD-PIN (Terada), Suzaku/GSO (Terada),
MAXI/GSC (Sugizaki), Fermi/GBM (Case)

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Absolute Crab measurements at high energies

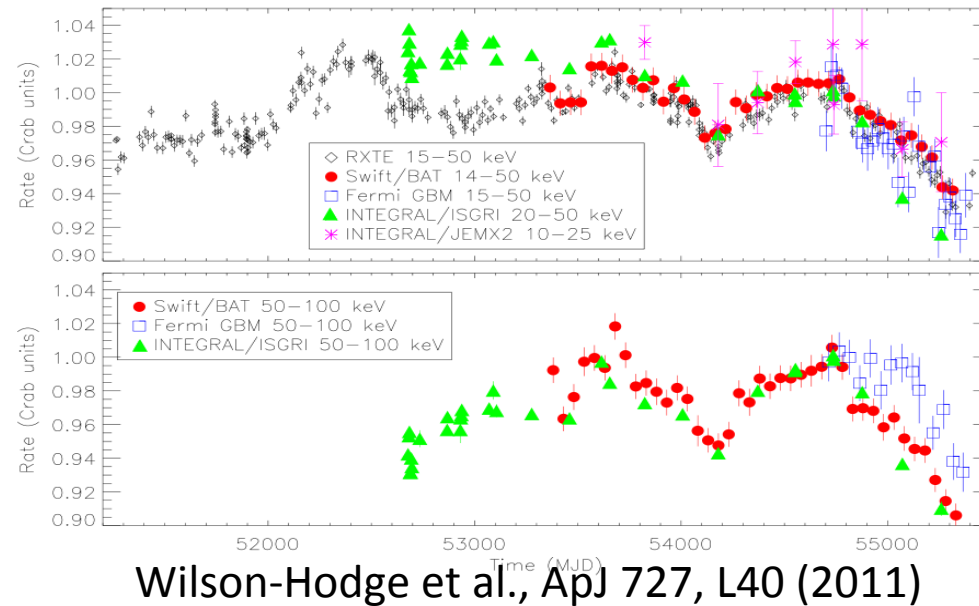
- Many balloon borne observations
- BATSE, COMPTEL & SPI: PL with break at ~ 100 keV
A high energy component (> 700 keV) is seen by BATSE, not seen by SPI

Soft band measurements

- Chandra & XMM: results from mapping of the nebula
- Extraction of average spectra is difficult
- Shape is uncertain below ~ 2 keV due to absorption

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Variability and time frame of the cross-calibration



- Use of a common observation epoch
- 2007-2010 to maximize overlap among instruments
(availability of data from EPIC-pn?)

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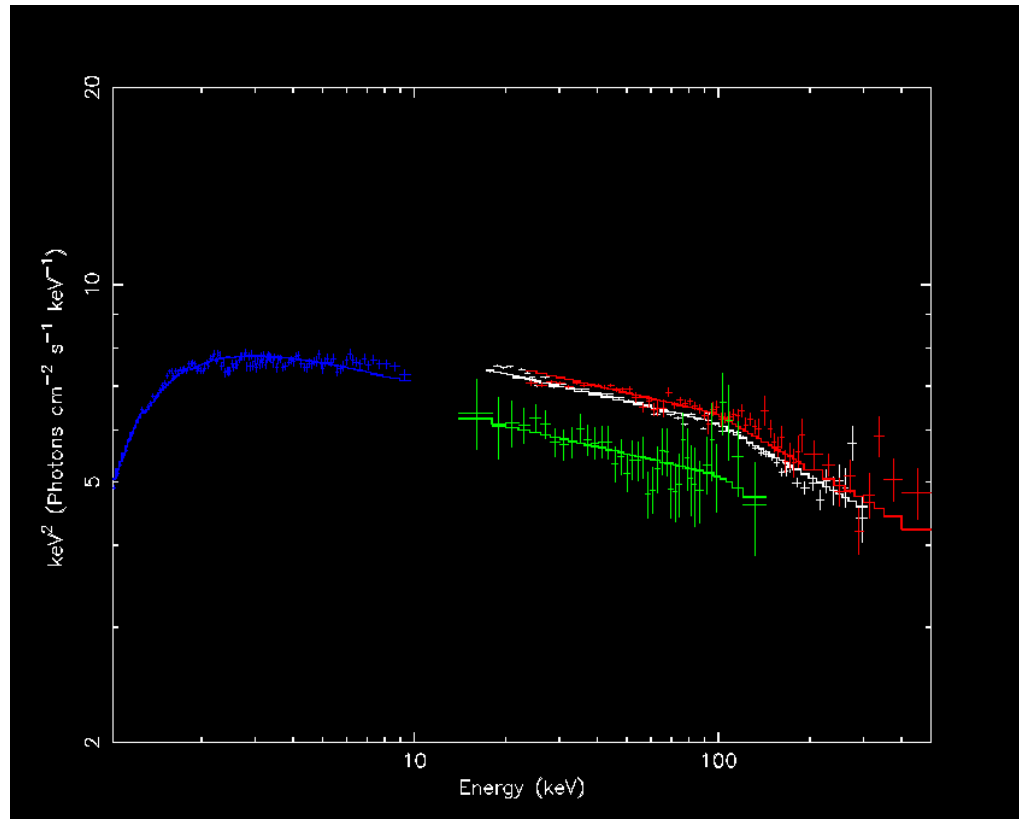
Spectral modeling of the Crab emission

- Empirical models other than PL, for “smoothed” high energy break
- Power law of $\ln(E)$, additive correction factor? Etc.
- Use PL & co. models in varying bands to assess the need for correction
- Address the issue of modeling Crab pulsed & nebular emission separately

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Preliminary results of spectral fitting

4-instruments fit



Relative normalizations

0.87 (XMM)

0.97 (IBIS)

1.00 (SPI, fixed)

0.81 (BAT)

$\Gamma_1=2.107\pm0.004$

$\Gamma_2=2.27\pm0.02$

Ebr=97±6

Red.χ²=1.60 (379dof, syst=0.01)

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Procedure, planning

- Procedure, collecting data & information from the teams
- Contributions now stored on a local FTP site, will be put on the IACHEC Wiki

Actions

LN: circulate the protocol

LN. Finalize draft with current data (end April)

MW: Info about soft band processing incl. Absorption model

MI: Terada-san to send data of Suzaku & contact Sakamoto for BAT

RP: contact the RXTE team to verify their involvement in the project

GC: provide data & info for GBM