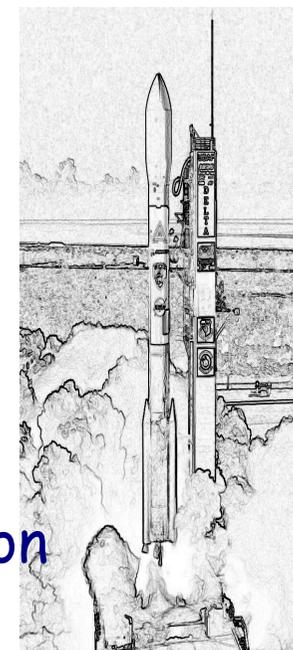
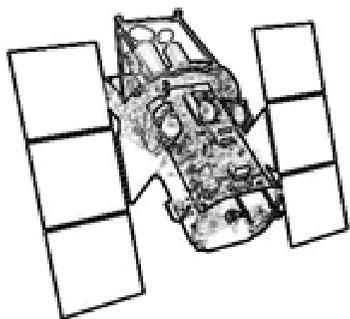


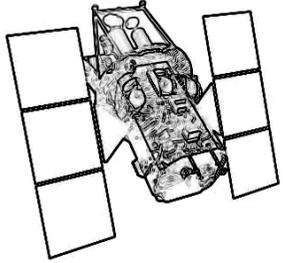
# The Swift Blazar Key Project @ASDC



P. Giommi <sup>1</sup>

on behalf of the Swift blazar collaboration

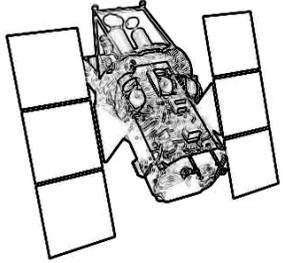
1) Agenzia spaziale Italiana



# Status of the observations as of 20- August-2006

Of the 95 blazars requested in AO1+AO2 (Swift team filling targets)  
90 have been observed  
~350 observations  
XRT exposure ranging from 500 s up to 50,000 s

35 new blazars with no previous X-ray data have been accepted  
as AO3 filling targets (starting August 2006)  
7 observations done so far



# Blazar Samples

- **WMAP Blazar:** Observations of all 23 WMAP sources that had no previous X-ray detection in a flux limited (41 GHz flux  $> 0.8$  Jy) sample of 140 blazars
- **TeV BL Lac:** 8 HBL detected at TeV energies (es: Mkn 421, 1ES 1959+65,...);
- **HBL objects:** additional 8 HBL with synchrotron peak in the UV/X-ray band;
- **IBL - LBL:** 10 sources with synchrotron peak in the near and far IR;
- **EGRET blazars** with no previous X-ray detection (9 objects)
- **Other blazars** with no detection at X-ray frequencies (35 objects)

## Specific sources:

3C 454.3 giant flare in May 2005.

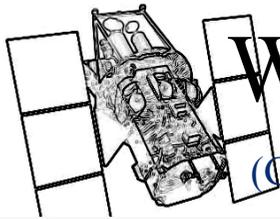
3C 279 simultaneous obs. with INTEGRAL/Chandra

Very large flares from MKN 421 (up to  $\sim 100$  mCrab)

ROXA 081010+384757 a  $> 10^{47}$  erg/s blazar with  $\nu_{\text{peak}} > 50$  keV or a new class of AGN?

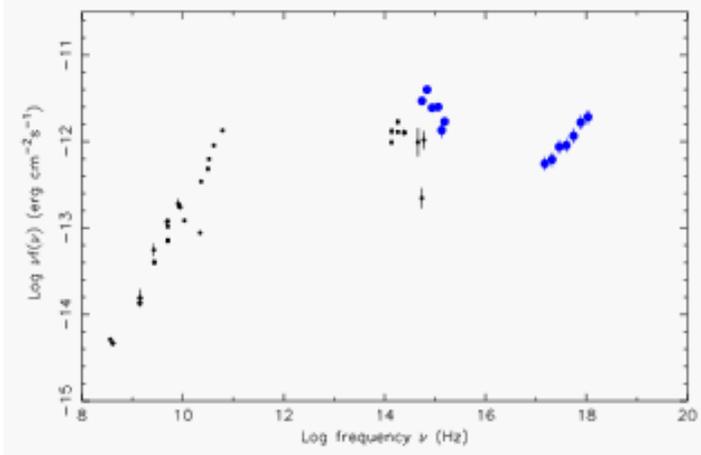
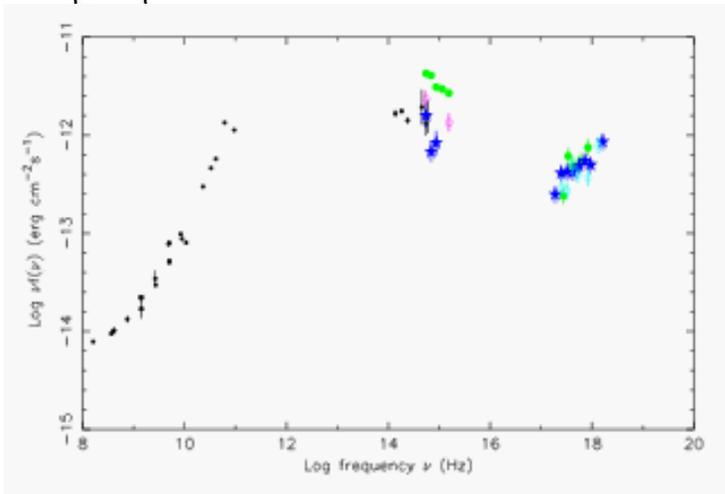
1ES1218+304 simultaneous observations with MAGIC

OJ 287 monitoring campaign across the next maximum in the claimed 11.xx year period



# WMAP selected Blazars

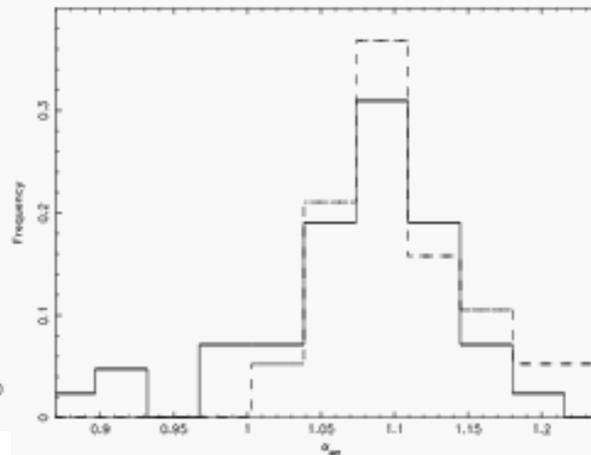
(Giommi et al. 2006, A&A in press).



Out of the 140 blazars detected by WMAP with  $S(41\text{GHz} > 0.8 \text{ Jy})$  23 had no previous X-ray detection.

We have observed with Swift all these objects. All sources have been detected by XRT. UVOT and XRT data show that the spectrum of all sources is consistent with SSC where the optical/UV part is the end of the Synchrotron component and the X-rays are due to inverse Compton.

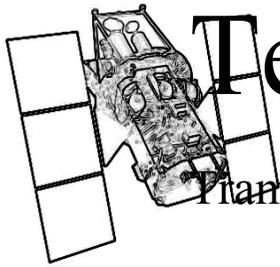
The microwave to X-ray flux ratio is remarkably constant.



All microwave selected blazars are X-ray emitters. X-ray flux is a good estimator of microwave flux, and may provide a constraint to the  $\gamma$ -ray duty cycle.

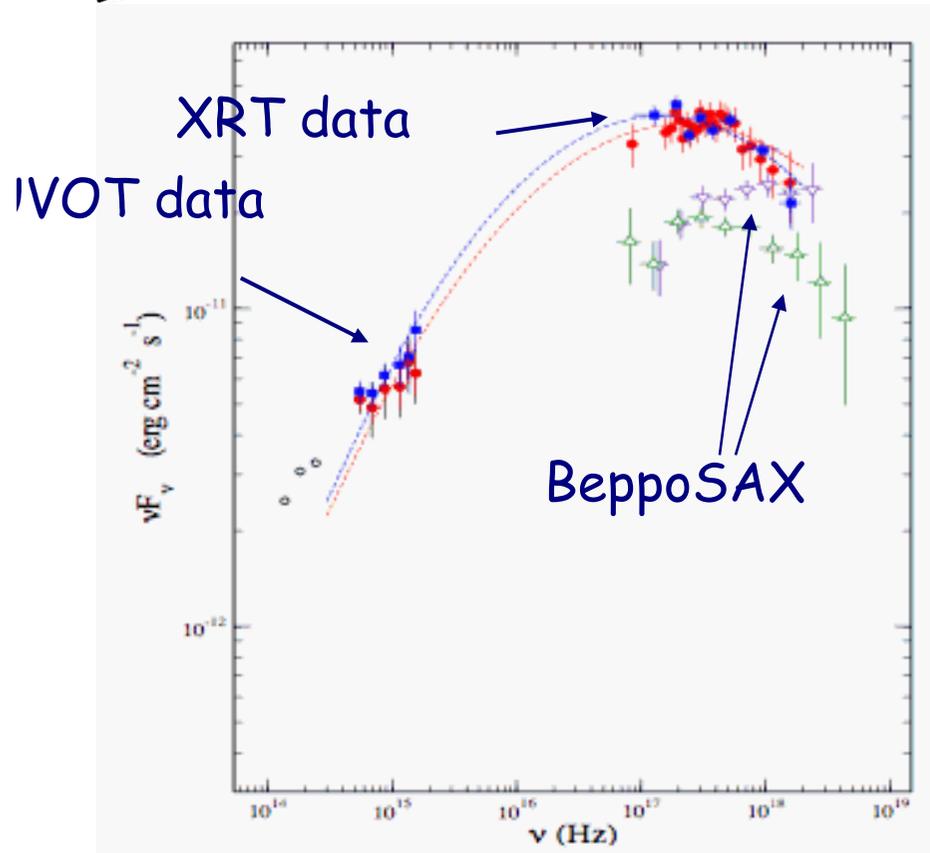
( $\alpha_{\mu\gamma} > 0.998 \rightarrow$  Blazar contribution to  $\gamma$ -ray background  $> 100\%$ )

SEDs of 1Jy 0805-077 (upper panel) and 1Jy 2227-088 (lower panel).

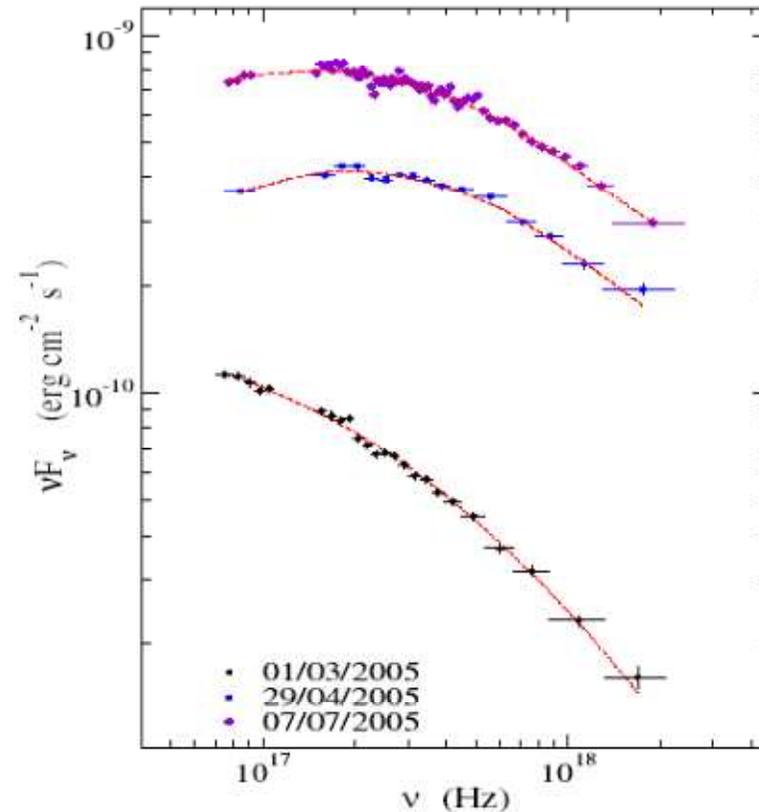


# TeV detected BL Lacs

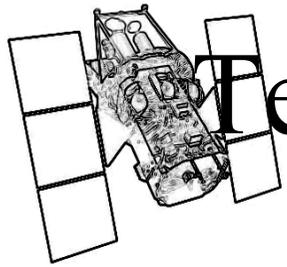
Tramacere et al. 2006, submitted



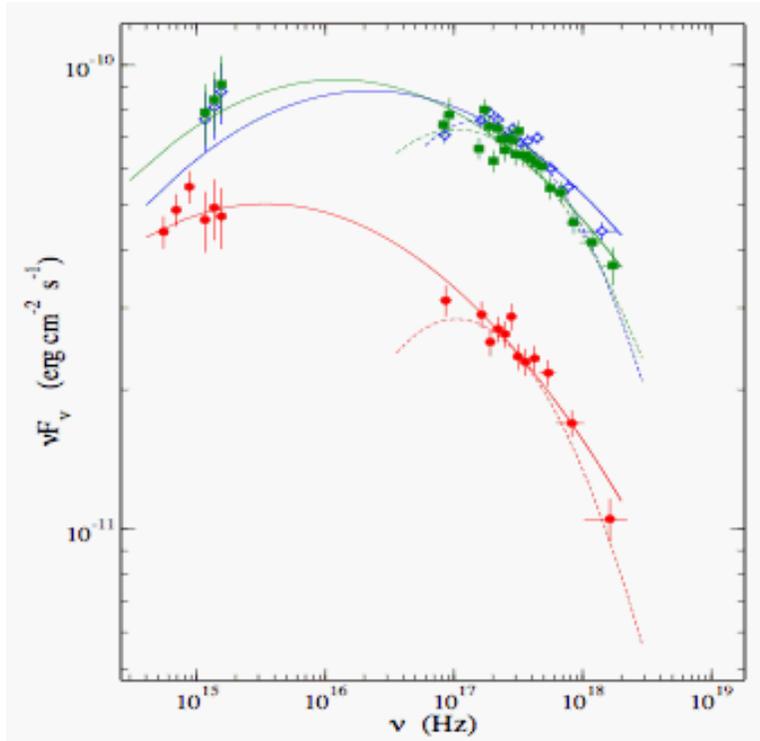
SED of 1H1100 - 230 observed on 30 June (blue) and 13 July 2005 (red). BeppoSAX 1997 and 1998 data are shown as open symbols.



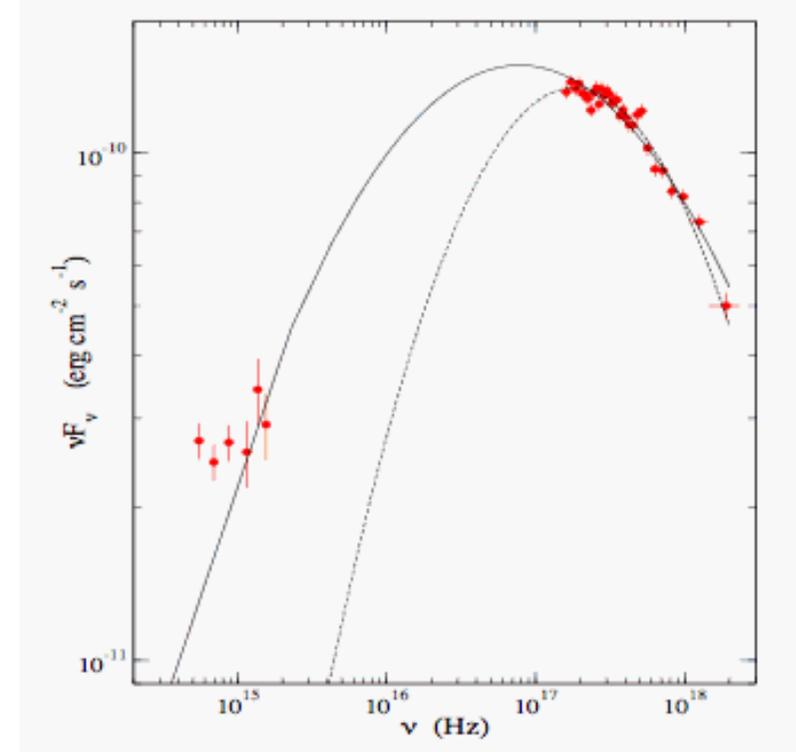
SED of MRK 421 in 2005: large changes in luminosity and peak energy.



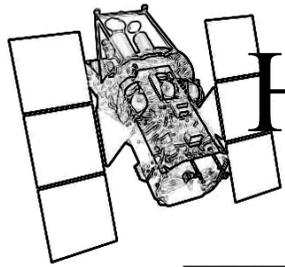
# TeV detected BL Lacs



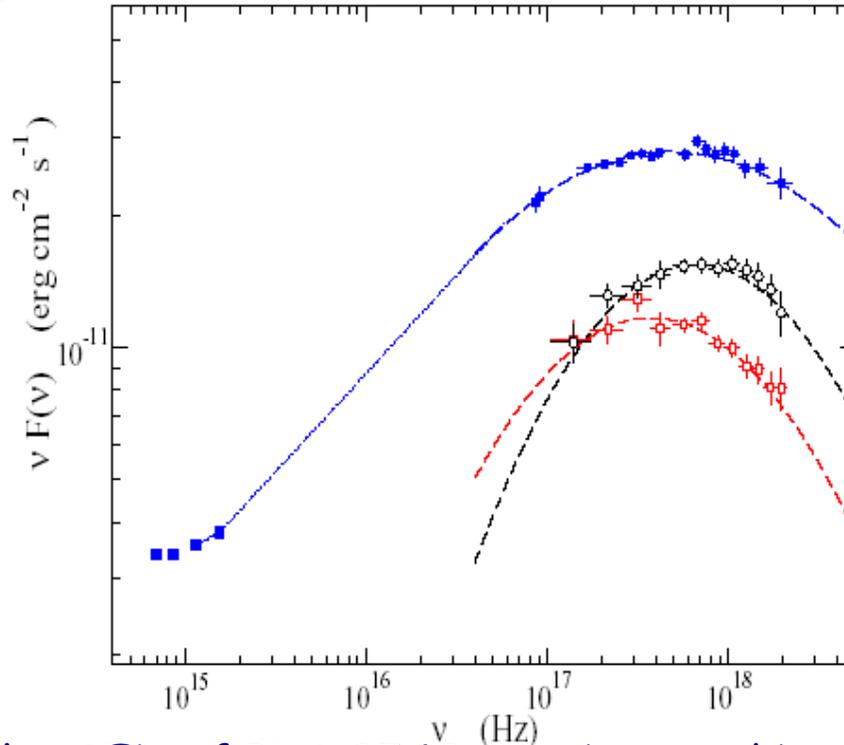
SED of 1ES 1553+113 observed on 20 April (red), 6 October (blue), and 8 October 2005 (green)



SED of 1ES 1959+650 (19 April 2005)



# HBL objects

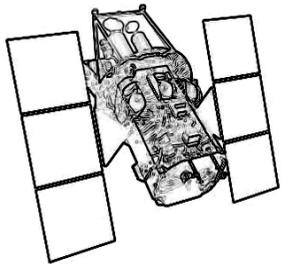


The SED of PKS 0548-32 observed by Swift on 22 May 2005 (blue points) and by BeppoSAX in February 1999 (red and black points).

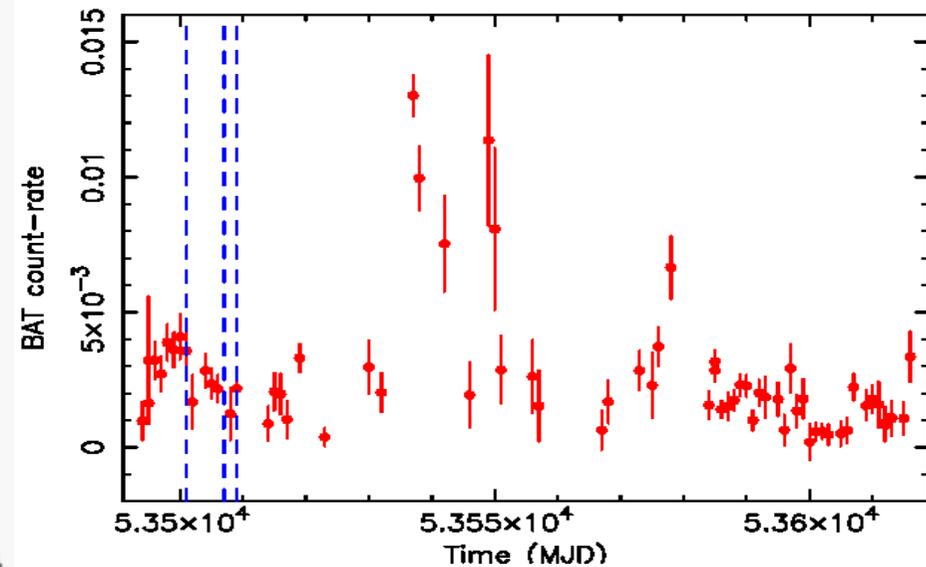
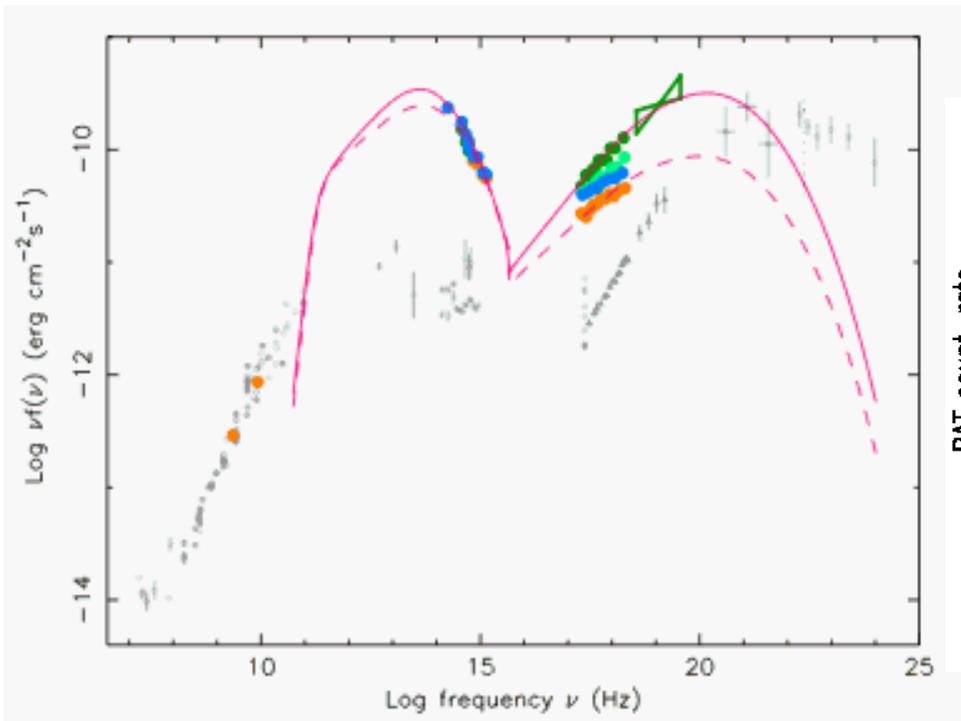
*Perri et al. 2006, submitted*

## *Other Swift observations*

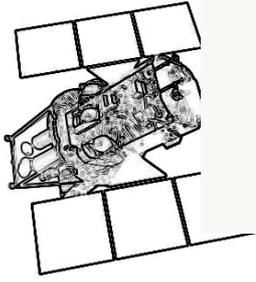
- *0033+595*
- *1E0120+340*
- *1E0145+138*
- *0325-1646*
- *1H0323+022*
- *PKS 0548-32*
- *1E1011+496*
- *MKN180*
- *1415+259*



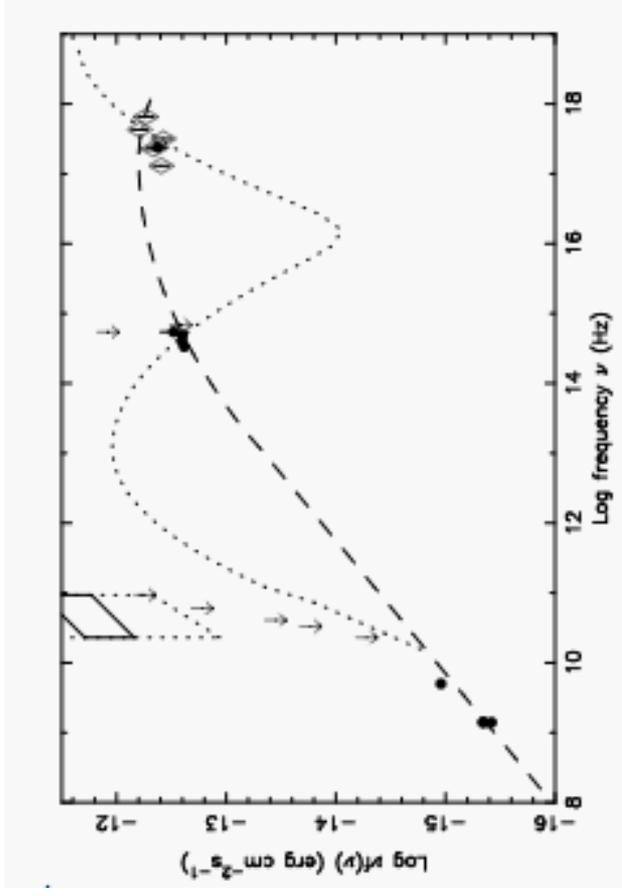
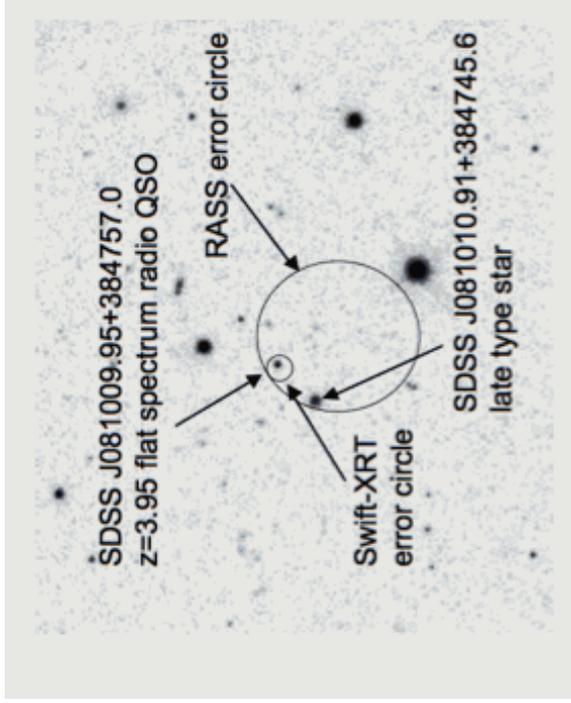
# The giant flare of 3C454.3 in spring 2005

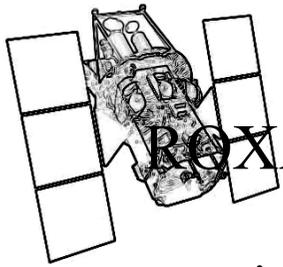


The SED of 3C454.3 and the Swift-BAT lightcurve in May-June 2005.  
(Giommi et al. 2006, *A&A*, in press).



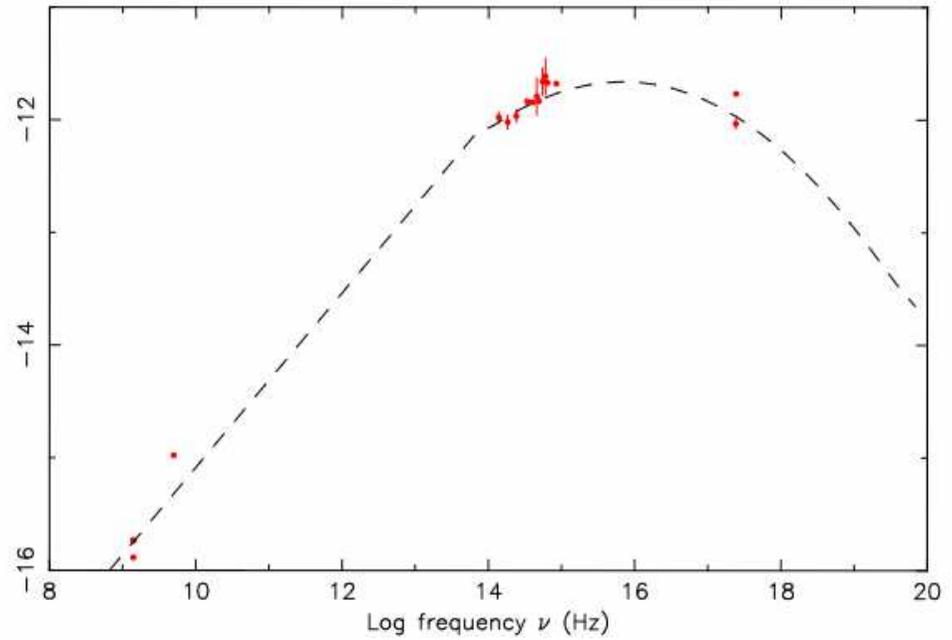
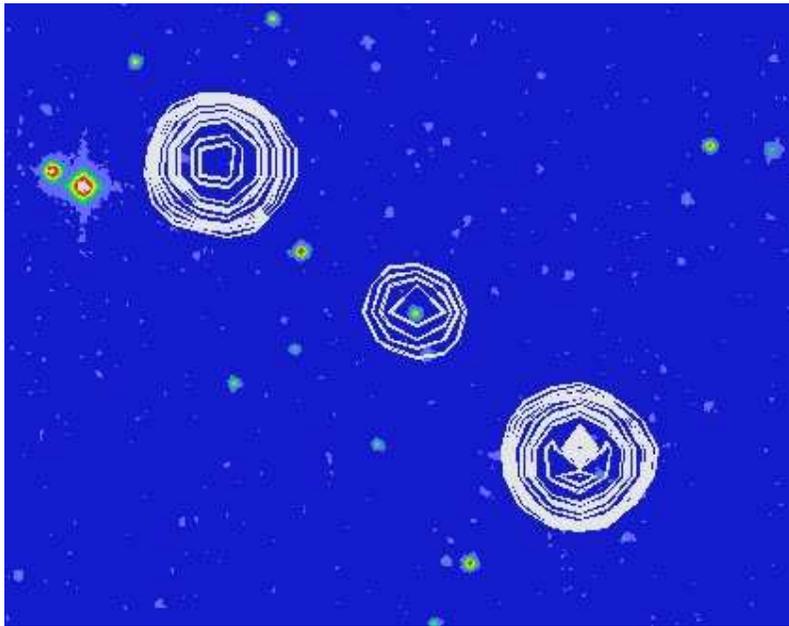
## ROXA J081009.9+384757.0: a $10^{47}$ erg $s^{-1}$ blazar with hard X-ray synchrotron peak or a new type of radio loud AGN?

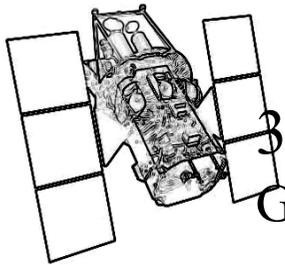




ROXA J092542.7+400414 a ( $z=0.47$ ) mispointed

version of ROXA J081009.9+384757 ?





3EG 0448+1127/3EG 0450+1105:  
GB6J0448+1127 ( $z=1.375$ ) or PKS 0446+112 ( $z=1.207 \rightarrow 0$ )

