

# XMM-Newton and INTEGRAL broad-band spectra of newly discovered broad line AGN

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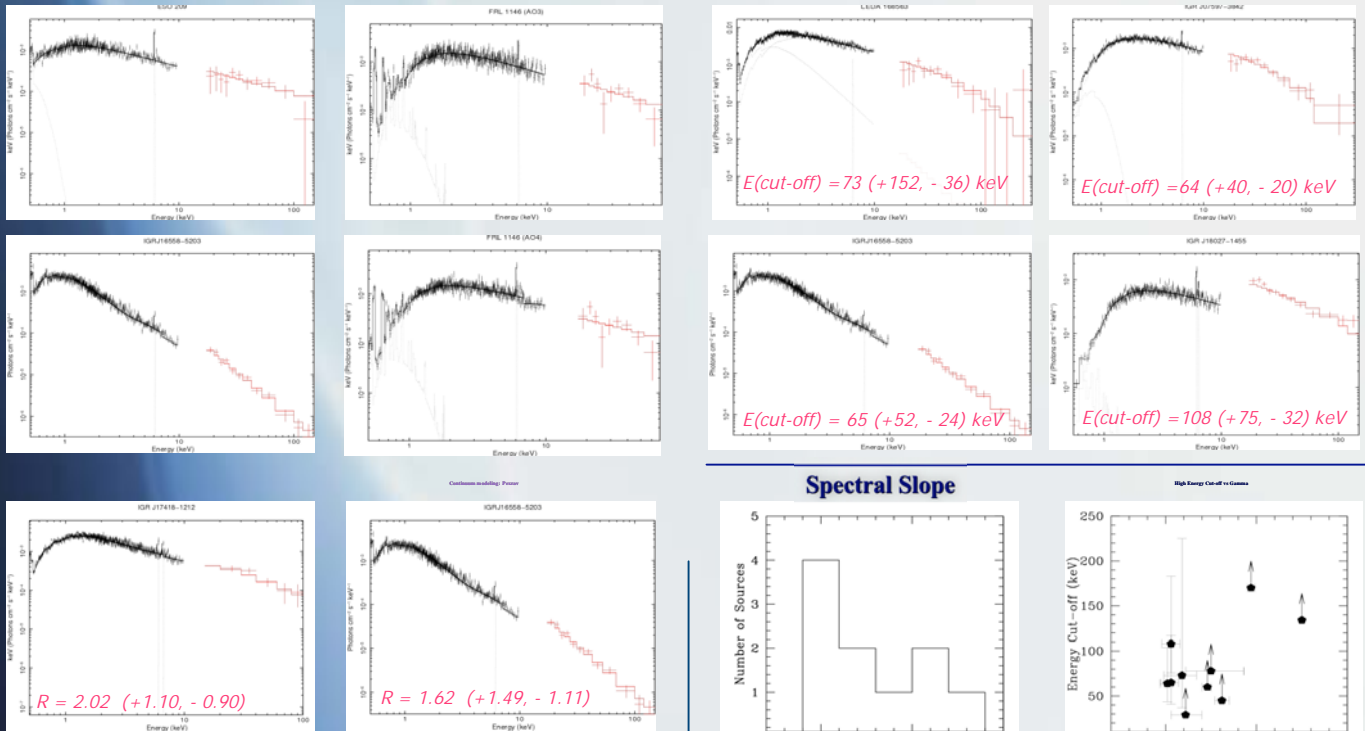
The INTEGRAL/IBIS is surveying a large fraction of the sky above 20 keV with a sensitivity larger than a few mCrab, discovering a number of new extragalactic sources many of which now identified as nearby AGN. We have combined INTEGRAL data with XMM-Newton information to probe the broad-band spectral properties of different AGN classes (radio-loud, type 1/2 Seyfert galaxies, NLSy1, etc.), representative of the population of AGN which are now being observed above 20 keV. Among broad line AGN, some were found to have very peculiar characteristics when compared with the INTEGRAL data, suggesting either extreme spectral and flux variability between the XMM-Newton and INTEGRAL observations, or a prominent reflection component dominating the hard X-ray data. In several cases, it is also possible that complex absorption could explain the differences between the two measurements. In some sources, cut-off energies have been constrained to be below ~150 keV. Preliminary results on a complete sample of type 1 INTEGRAL AGN will also be presented.

THE SAMPLE			Fluxes	
Name	Class	Redshift	2-10 keV	20-100 keV
LEDA 168563	S1	0.029	4.5E-11	5.3E-11
IGR J07597-3842	S1.2	0.04	1.5E-11	3.4E-11
ESO 209-12	S1.5	0.040	8.5E-12	2.2E-11
Fairall 1146	S1.5	0.031	1.3E-11	1.6E-11
4U1344-60	S1.5	0.013	3.5E-11	6.8E-11
IGR J18027-1455	S1	0.035	6.3E-12	4.8E-11
IGR J16558-5203	S1	0.054	1.1E-11	2.5E-11
IGR J17418-1212	S1	0.037	1.3E-11	2.3E-11

## THE INTEGRAL/IBIS SURVEY AND THE XMM-NEWTON AGN SAMPLE

Quantifying the fraction of missing AGN by surveys which are affected by selection effects due to absorption is necessary if we want fully understand the accretion history of the Universe. Furthermore, the measurement of the primary continuum, and its cut-off energy is crucial for understanding emission models and discriminating between them. The INTEGRAL/IBIS is surveying a large fraction of the sky above 20 keV with a sensitivity larger than a few mCrab, discovering a number of new extragalactic sources. Among these newly discovered AGN, 82% are Seyfert galaxies (Bassani et al. 2006). We have combined INTEGRAL data with XMM information to probe the average properties of AGN spectra, power-law index, cut-off energy and reprocessing features such as the reflection bump, the iron line complex and soft excess.

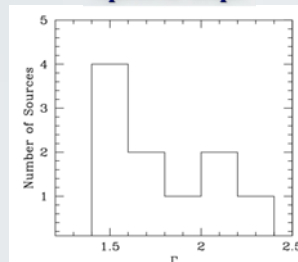
## The XMM-Newton and INTEGRAL broad band spectra



### CONCLUSIONS on Broad band X-ray spectra (Panessa et al. 2008, A&A, 483, 151);

- Intrinsic and partial covering absorption
- Soft X-ray component in half sample
- Peak at flat spectral slopes
- Constraint on the low energy cut-off below 150 keV
- No correlation between E(cut-off) and Gamma
- Two (or three) sources with strong reflection R > 1

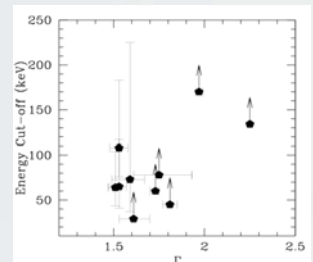
### Spectral Slope



• The mean of Gamma is  $1.78 \pm 0.26$ , common AGN slope

• Distribution peaks at 1.5, is this due to the hard X-ray selection?

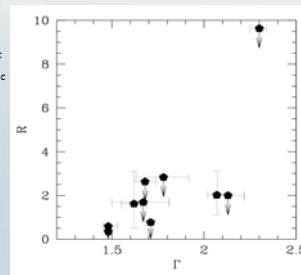
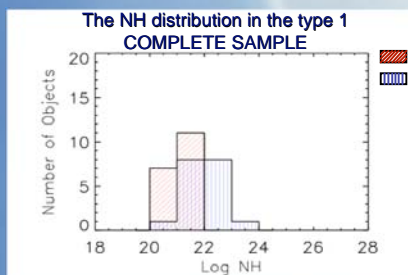
• Flat Gamma invoked for XRB Gilli et al. 2007



• Four sources with cut-off constrained below 150 keV (consistent with Ajello 2008, Swift/BAT)

• No correlation E vs Gamma at odds with previous results (Piro 99, Petrucci+2001)

- Now more than 40 newly optically identified bright AGN that miss X-ray observations below 10 keV → need XMM-Newton and Suzaku!
- Enlarge the sample and complete the census of local bright AGN --> preliminary results...(Malizia et al. in prep)



- Two objects R constrained to values > 1
- If C=1, we constrain the R also for IGR J18027 having R = 3
- Strong reflection in light bending models (Miniutti+) or special geometries (Malzac)
- High fraction of R>1 sources in XRB models including light bending
- The known correlation R vs Gamma (artifact of modeling degeneracy?) not found here.