The Abundance of Compton-thick AGN

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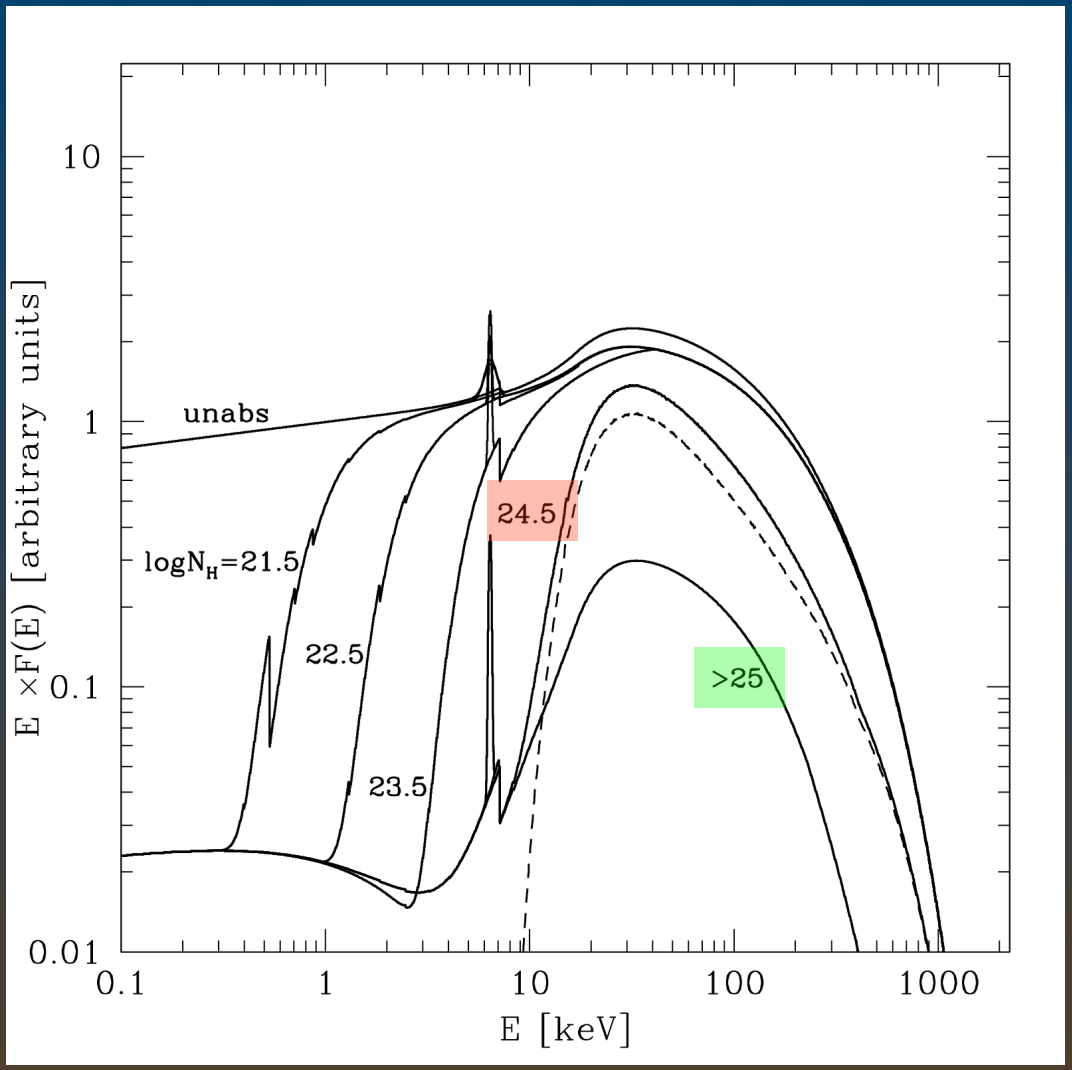
AGN X-ray spectral templates



Unabsorbed:
$\log N_H < 21$

Compton-Thin:
$21 < \log N_H < 24$

Compton-Thick:

Mildly ($\log N_H$ =24-25)
e.g. NGC 6240, Circinus, NGC 5728 (new, Suzaku, Comastri et al. in prep.)

Heavily ($\log N_H$ >25)
e.g. NGC1068

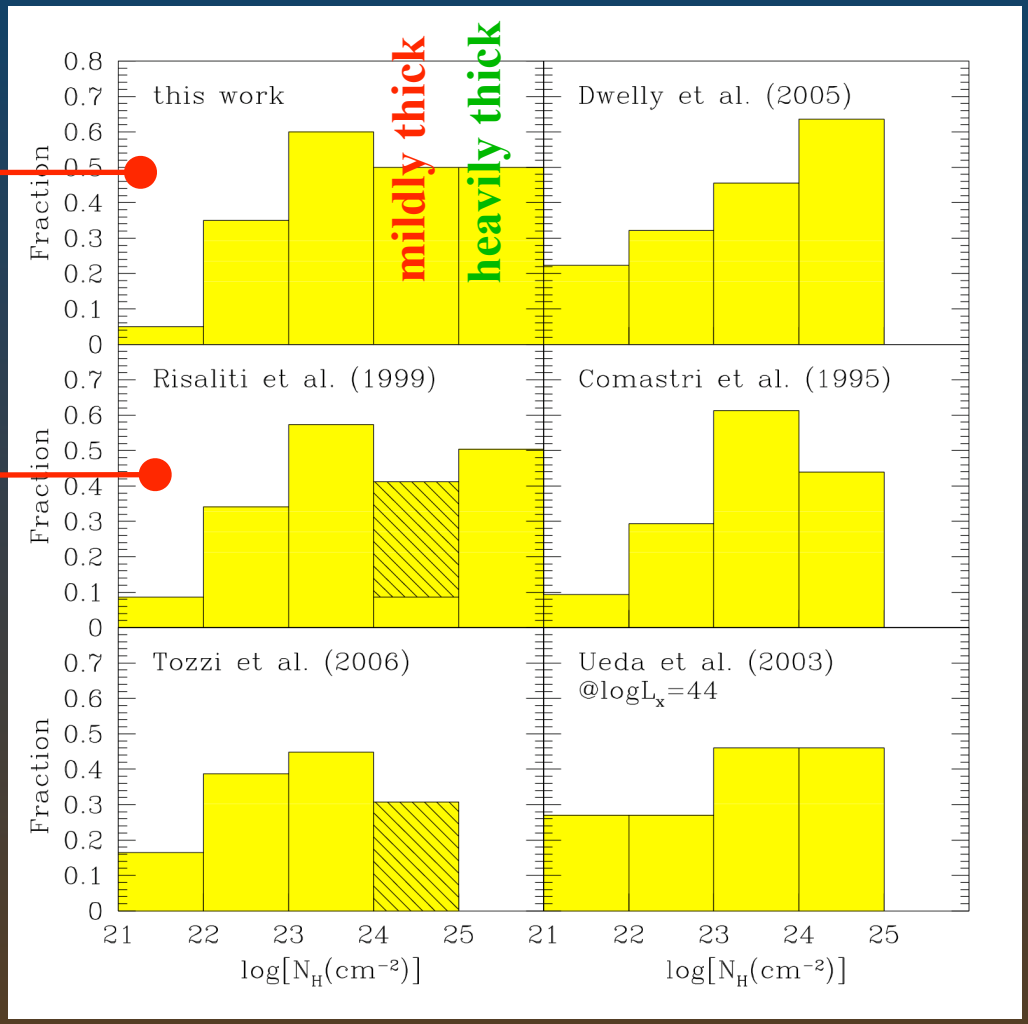
Only about 40 C-thick AGN (10 mildly-thick) known so far; see Comastri04

N_H distributions

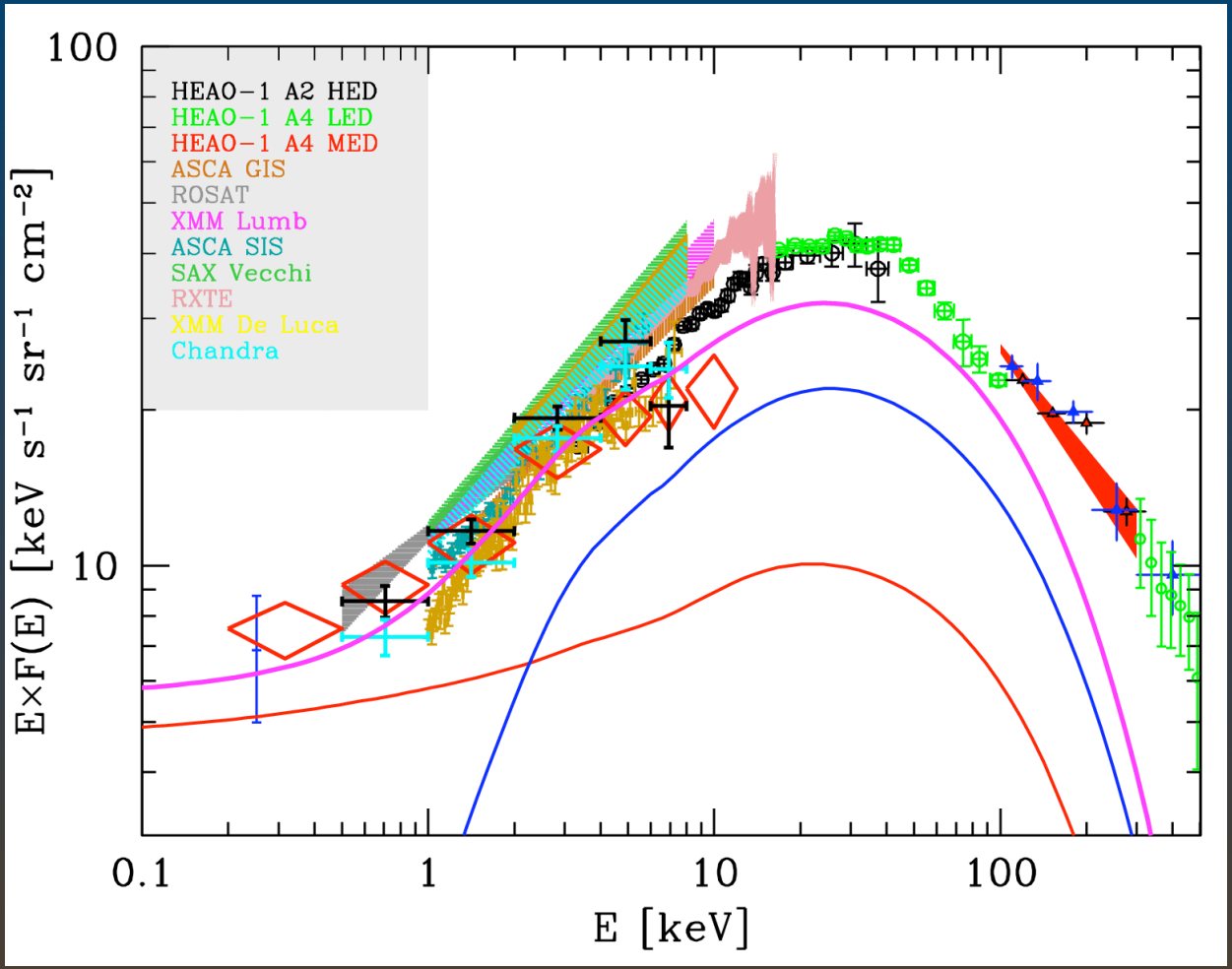
XRB models: N thick ~ N thin
assuming
N mildly-thick ~ N heavily-thick

Local Universe: Sy2 thick ~ Sy2 thin

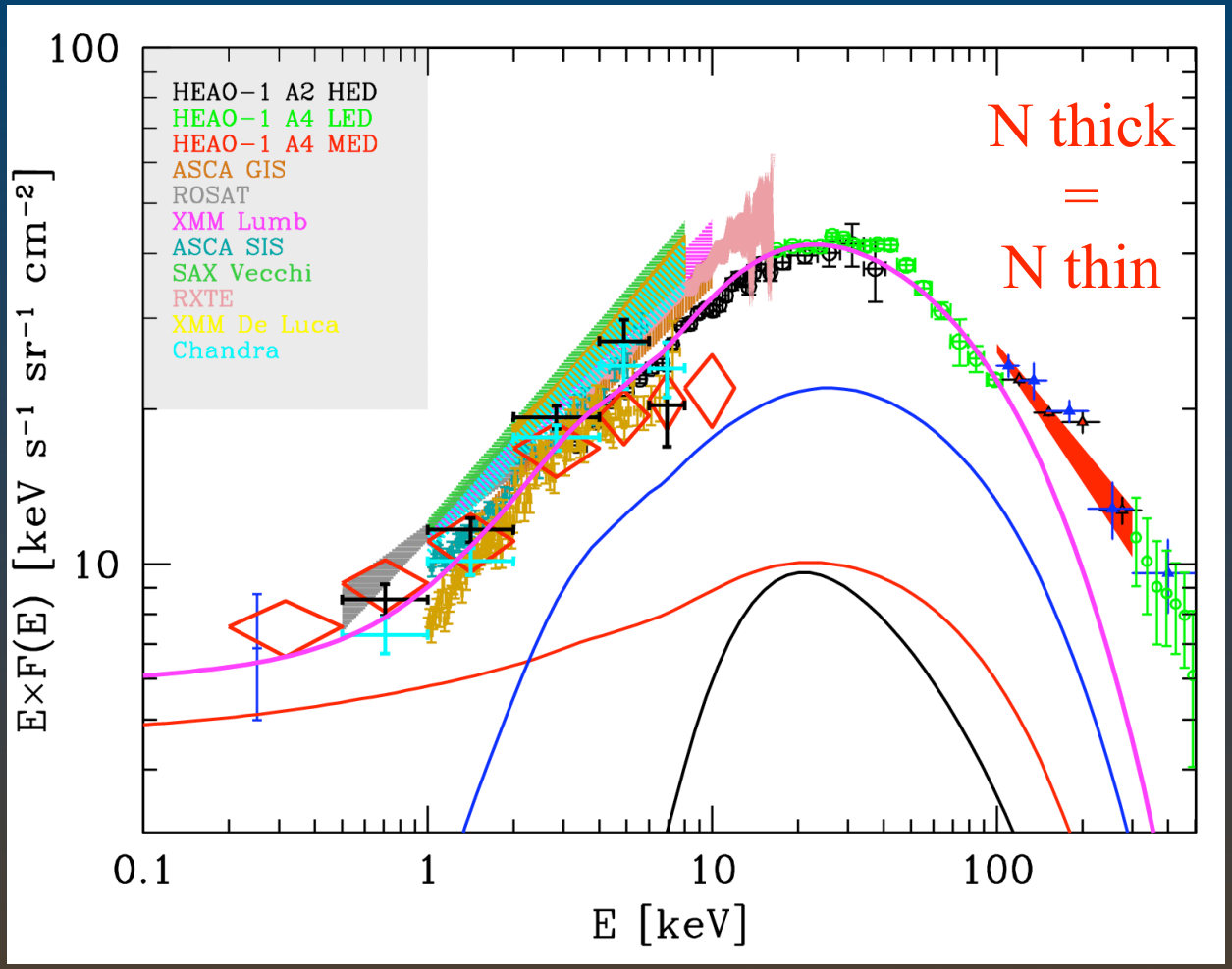
At z~2 luminous obscured
QSOs are abundant
(see Martinez-Sansigre et al. 05,06)
But how many of them are C-thick?



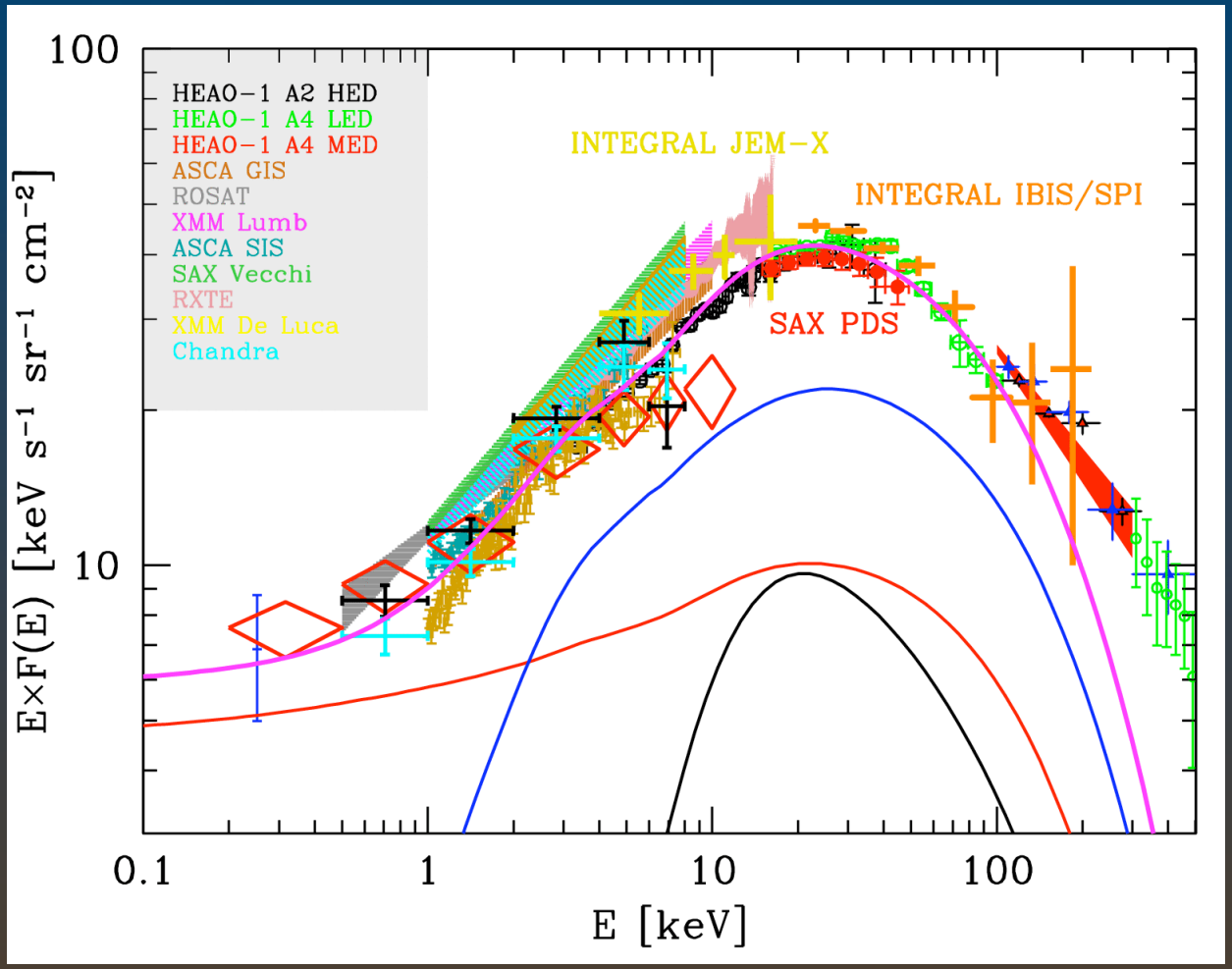
The XRB spectrum



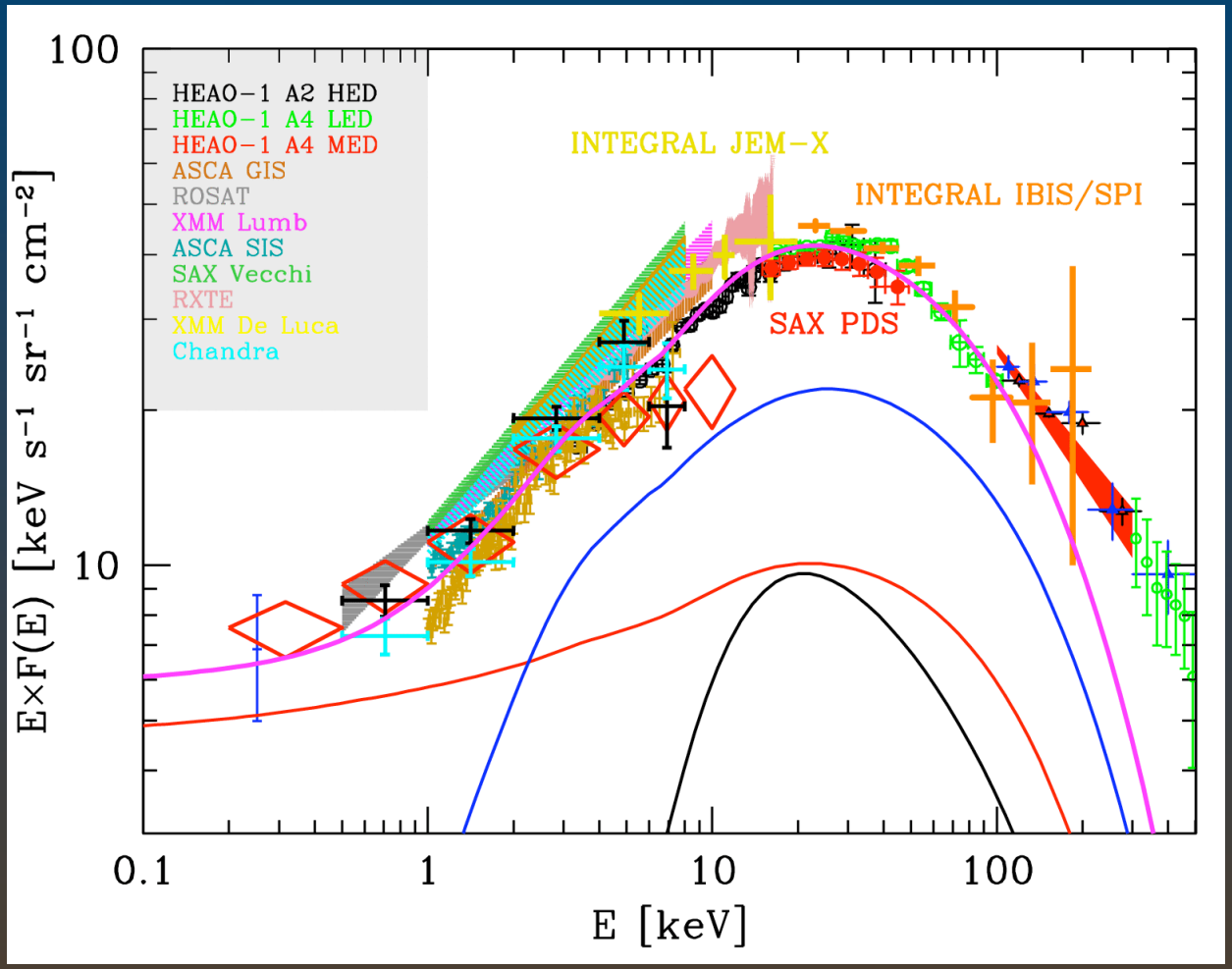
The XRB spectrum



The XRB spectrum

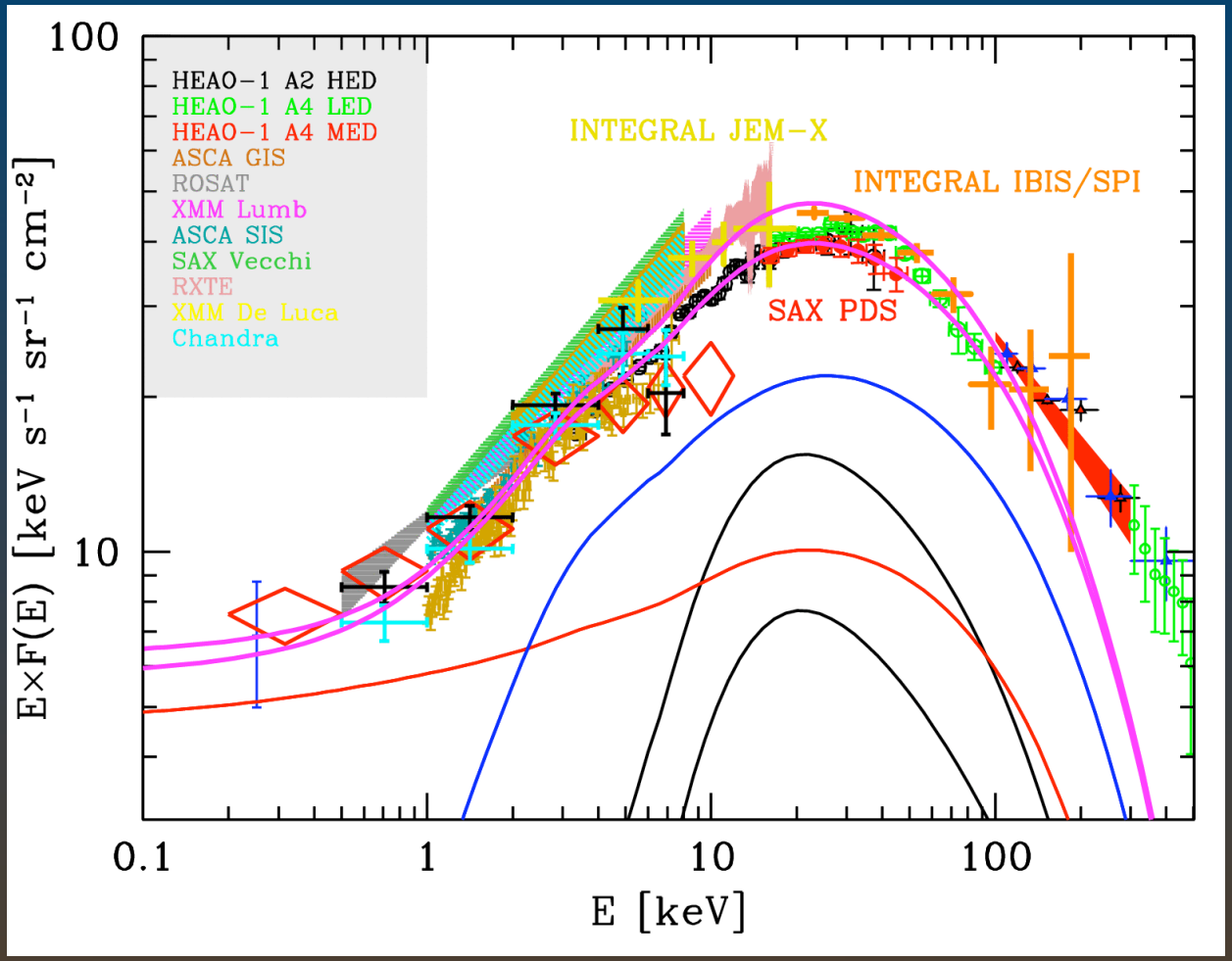


The XRB spectrum



INTEGRAL: Churazov et al. 2007; SAX PDS: Frontera et al. 2007, submitted

Uncertainties on the C-thick number

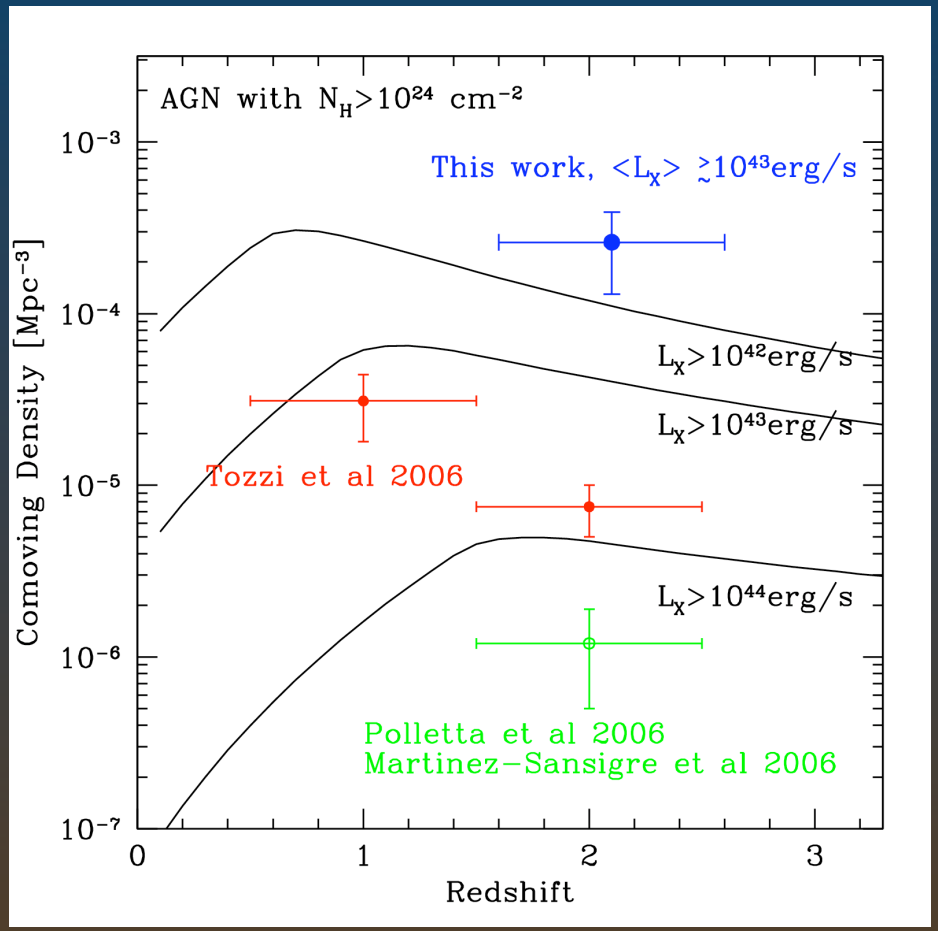


Lower:
no heavily-thick
Upper:
heavily = 4x mildly

The number of heavily-thick AGN is poorly constrained by XRB models

C-thick space density

Candidate C-thick objects in mid-IR excess sources



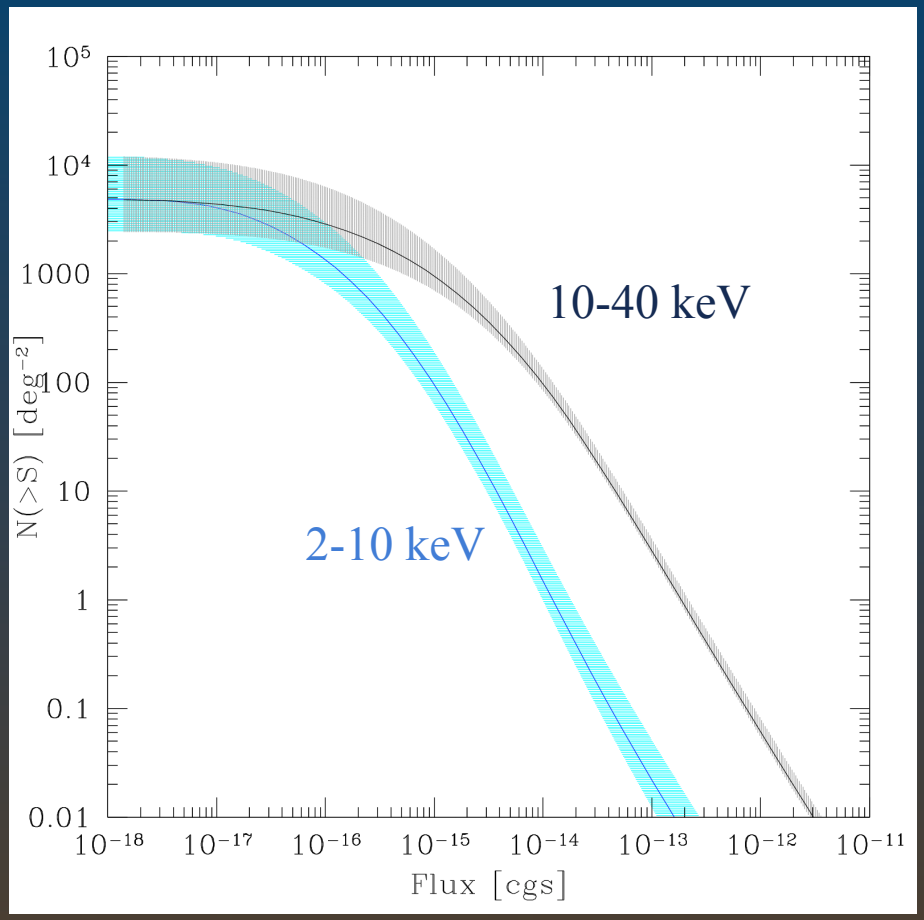
From Daddi et al. 07

Daddi et al. 07 (arXiv:0705.2832)
Fiore et al. 07 (arXiv:0705.2864)

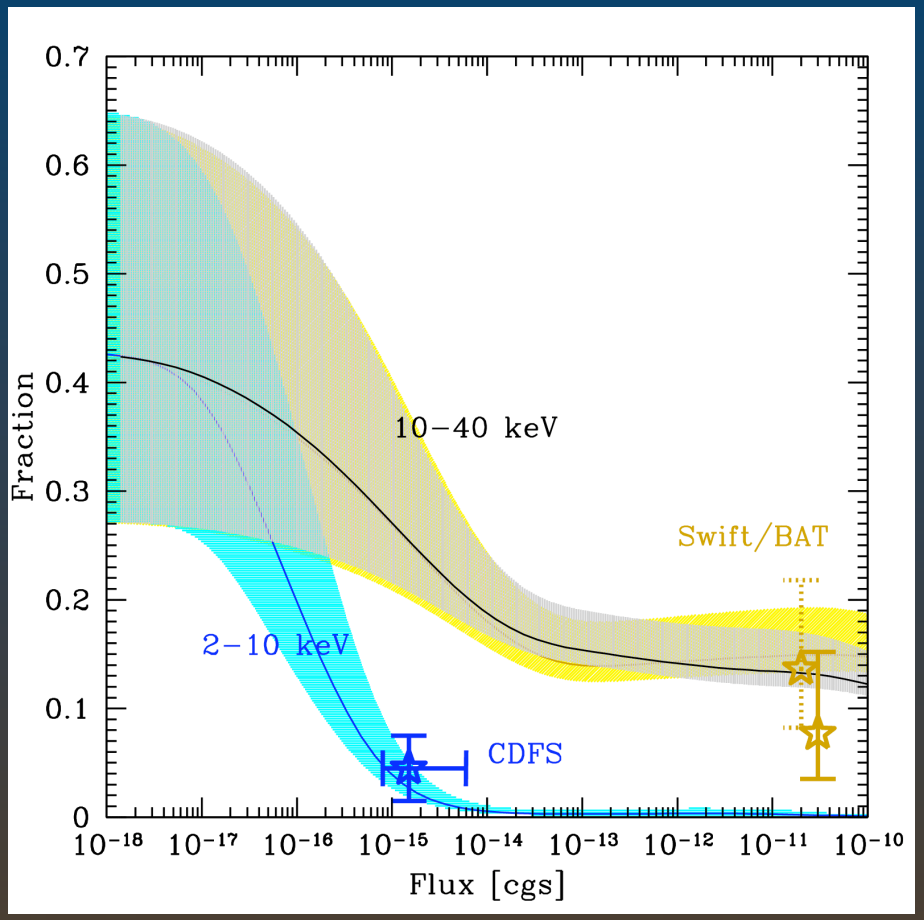
At z~2:
N thick ≥ N thin

C-thick AGN in X-ray surveys

logN-logS



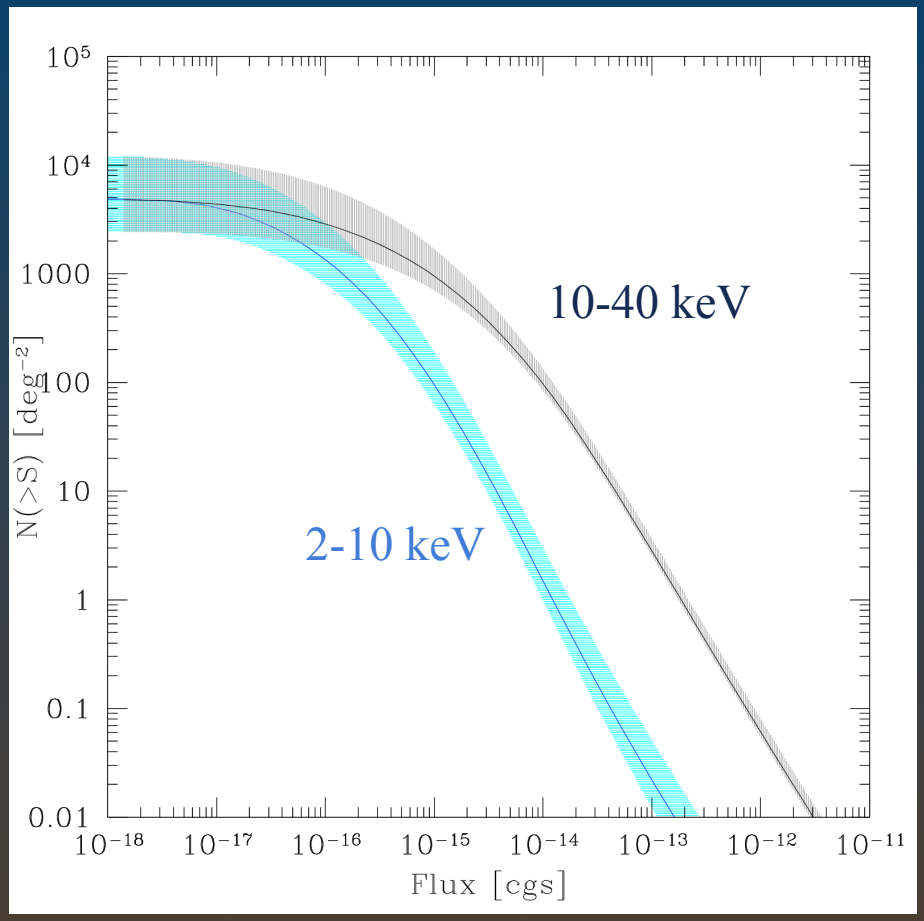
Fraction



CDFS: Tozzi et al. 06 Swift: Markwardt et al. 06

C-thick AGN in X-ray surveys

logN-logS



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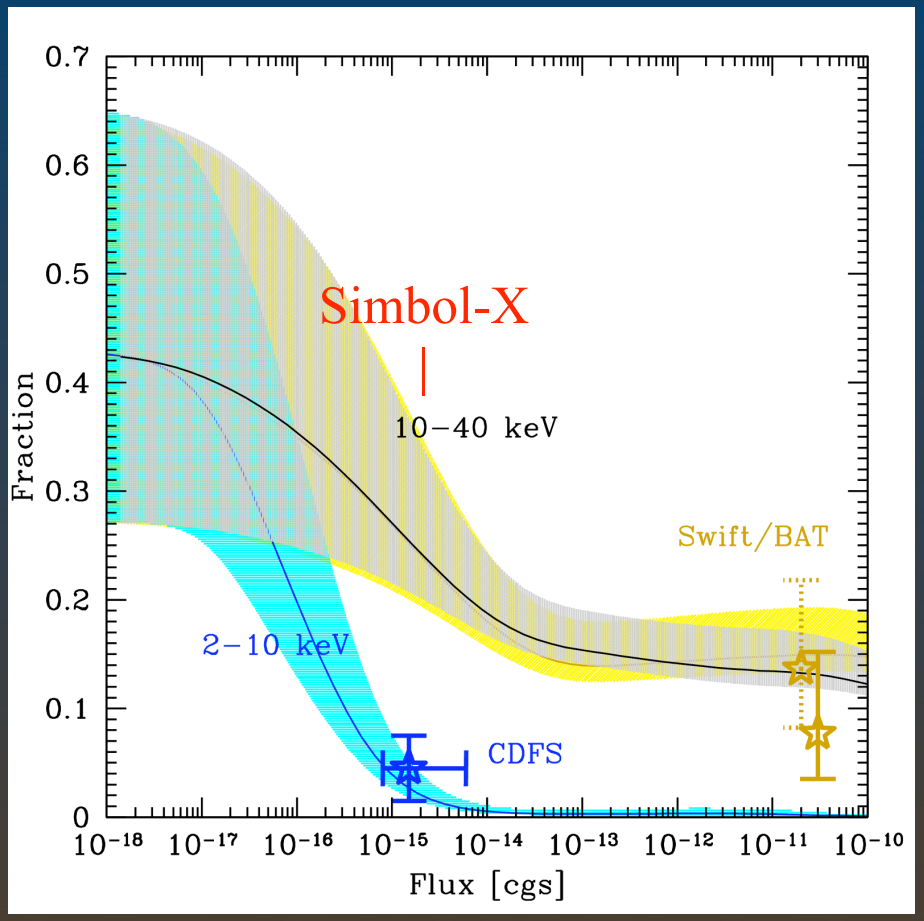

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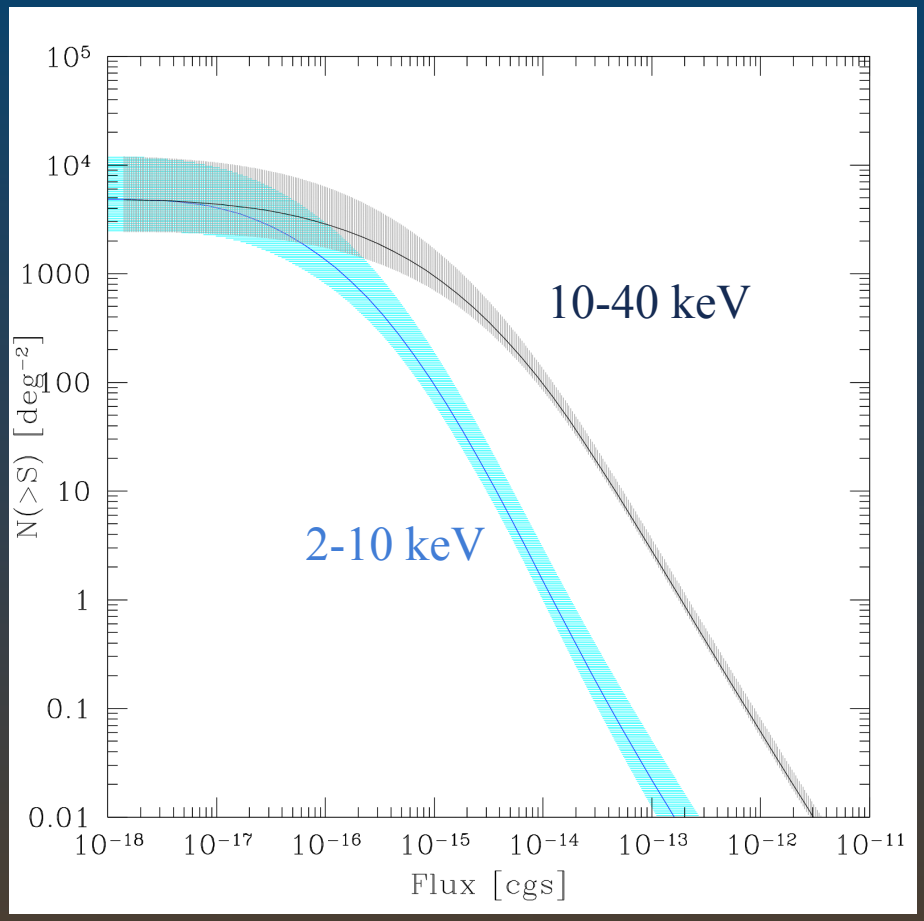

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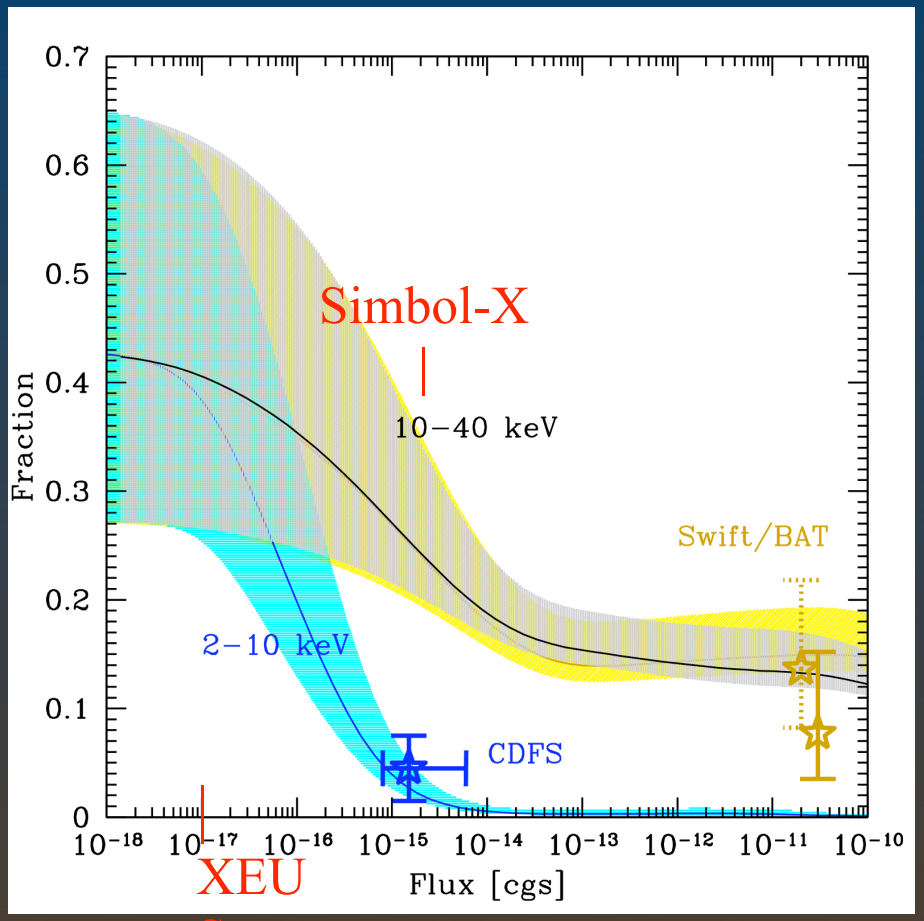

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Conclusions

N thick ~ N thin

(or N thick >> N thin ?)