Workshop CAL TARGETS

- What do we aim for in this session?

-Cal targets highly depend on he mission. Some targets can be fine for XMM or Chandra, but RXTE or INTEGRAL can not see them.

- Also depend on scientific subjects: imaging, timing, energy range,…

- Sources with simple physics, because we have to understand what the sources do.

- Clusters of galaxies: extended, illuminate large area of the detector, but show spatial structures with spectral differences.

- How to connect low energy targets/missions to high energy ones? Problem of different time scales for exposures, e.g. ksec versus Msec. Simultaneous observations are needed.

- How to calibrate the energy scale for higher energies of future gratings? Difficult to find astronomical targets with well defined lines. On-board calibration sources or defined fluorescence lines from detector structure or even moveable metal plates could help, (e.g. see copper line for XMM pn).

Source	Energy keV	Flux	Simplicity	Var	Extend	Lines	purpose
HZ 43	< 0.2	Bright	WD	No	Point	Cont	
Sirius B	< 0.2	HZ43 /10	WD	No	Point	Cont	
RXJ1856	< 1	Faint	NS, simple	No	Point	Cont	
1ES0102	0.4-1.5	Bright	Complex	No	1’	Lines	
PKS2155	0.2-20+	Med	Blazer	Yes	Point	Cont	
Capella	0.2-2	Bright	Brems + lines	Yes	Point	Lines	
AR Lac			Brems + lines		Point	Lines	
HR 1099	0.5-6	Bright	Brems + lines	No	Point	Lines	
Algol	0.5-6	Bright	Brems + lines		Point	Lines	
Crab	0.5-	Bright		Yes	Yes	Cont	
Cas A				No			
PSR 1509				Yes	Point		
3C273		Bright		Yes	Point, jet	Cont	
Mkn421		Bright		Yes	Point		

O836+71	1-100	Bright	FSRQ	Yes, spectral constant		Cont	
Perseus cluster					Yes		
A2199					Yes		
Ophi cluster	<20						
Cygnus loop	0.3-5					Line	contaminati on
On-board calibra-tion sources with instru-mental fluores-cence lines			Move block of metal below detector, e.g. as seen from XMM pn copper		Yes	Line	
Bursters							Variability tracking, timing alignment
Star clusters							Astrometry
Ngc2516			Star cluster				Astrometry
Highly absorbed sources							redistributio n
Closed							Instrumental background

Future missions	Needs	Comments
Con-X	Energy scale > 6 keV, line shapes	Grating calibration, XMS
	Lines with widths known < 100 km/s	
		Bright stellar flares
On-board calibration sources with instrumental fluorescence lines		
Transfer standards	Connection of low energy sources with high energy sources, targets for simultaneousobservations	Problem of different exposure times to get high quality spectra, e.g. ksec for low x-rays but Msec for high energy missions