# Sphinx data calibration

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## Sphinx calibration

**The X-Ray Astronomy Calibration and Testing (XACT) Facility, the Osservatorio Astronomico di Palermo**

**The Berliner Elektronenspeicherring-Gesellschaft für Synchrotronstrahlung (Bessy II)**
**The Physikalisch-Technische Bundesanstalt (PTB)**
**Germany's national metrology institute**

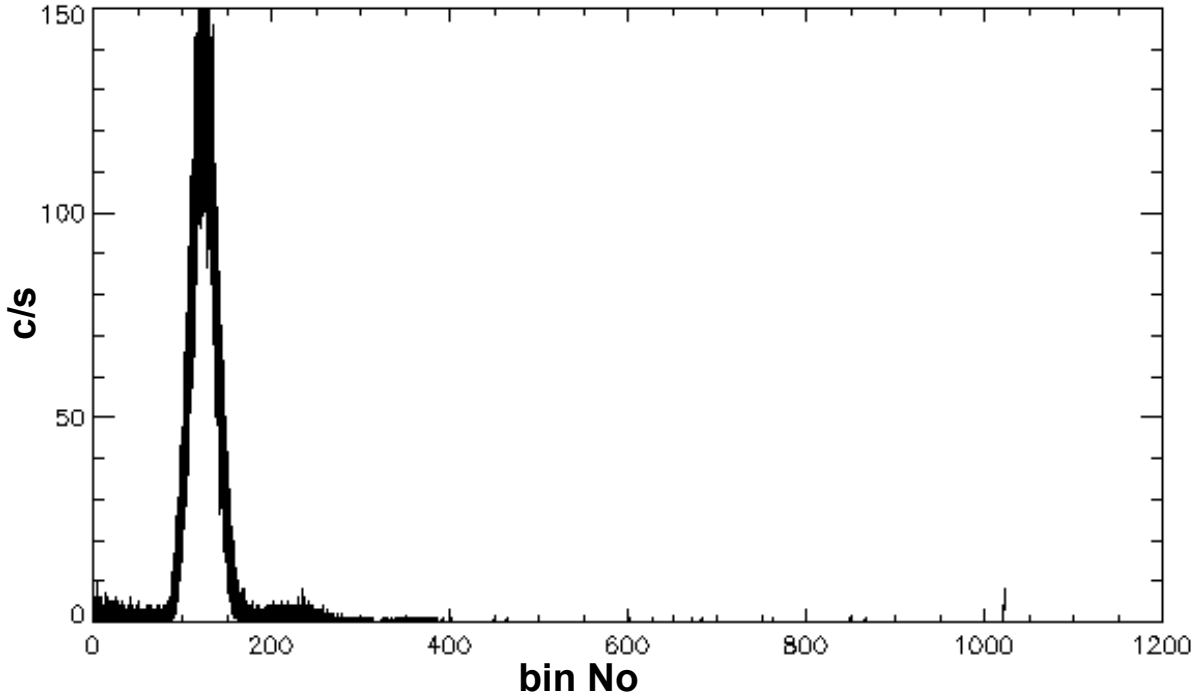
**monochromatized (synchrotron) radiation for the 9 photon energies (1.8 to 12 keV)**

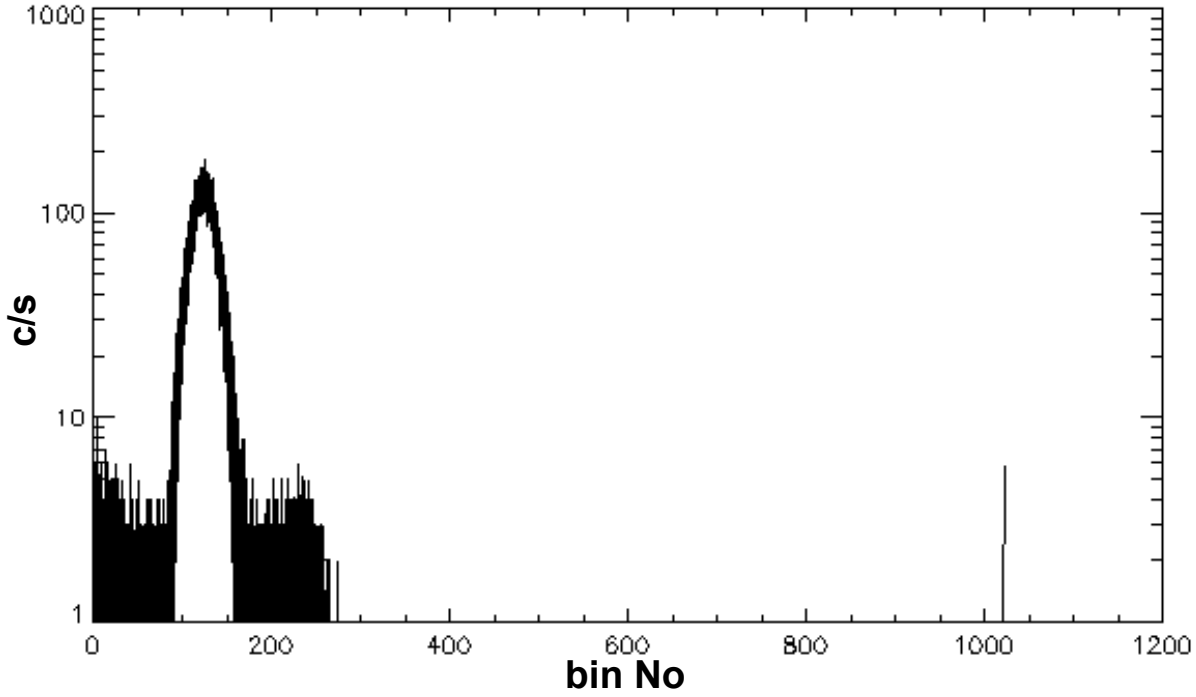
- the absolute energy scale
- detectors energy resolution

**continuum spectra**

- true efficiency (detector + UV filters)

T:\SPHINX-F\BESSY\BESSY_CAL_DATA_GOOD\kanal_A_InSb_cristal\D1\SpX20080227142746.fts.gz

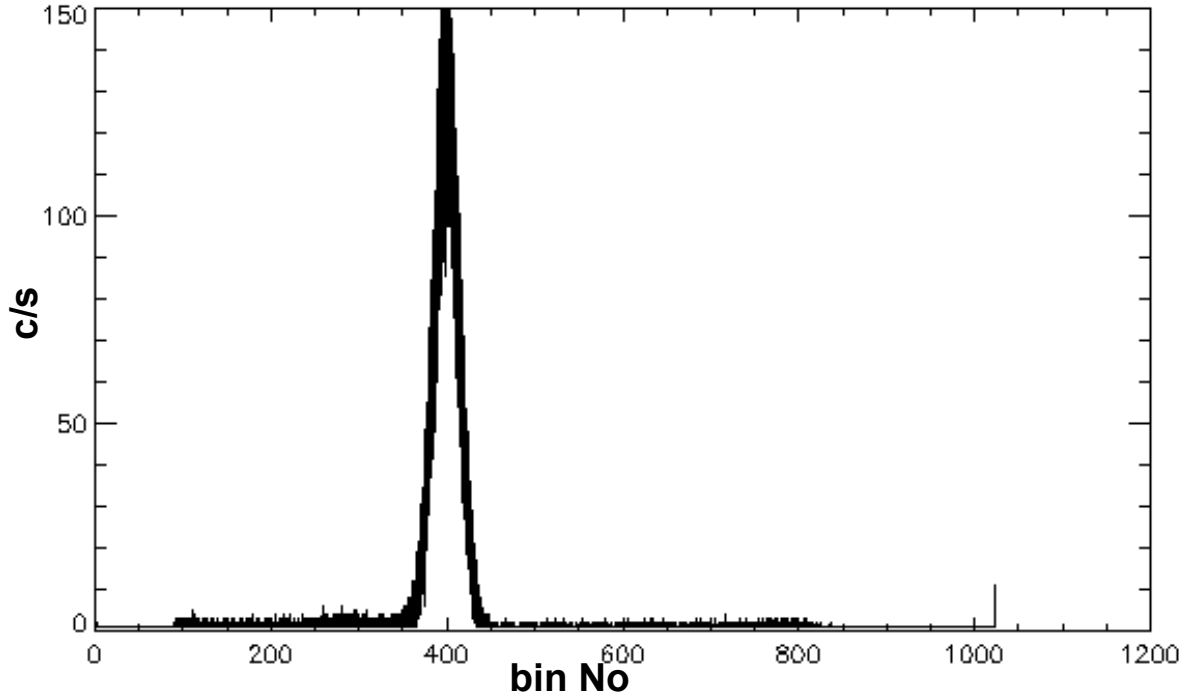


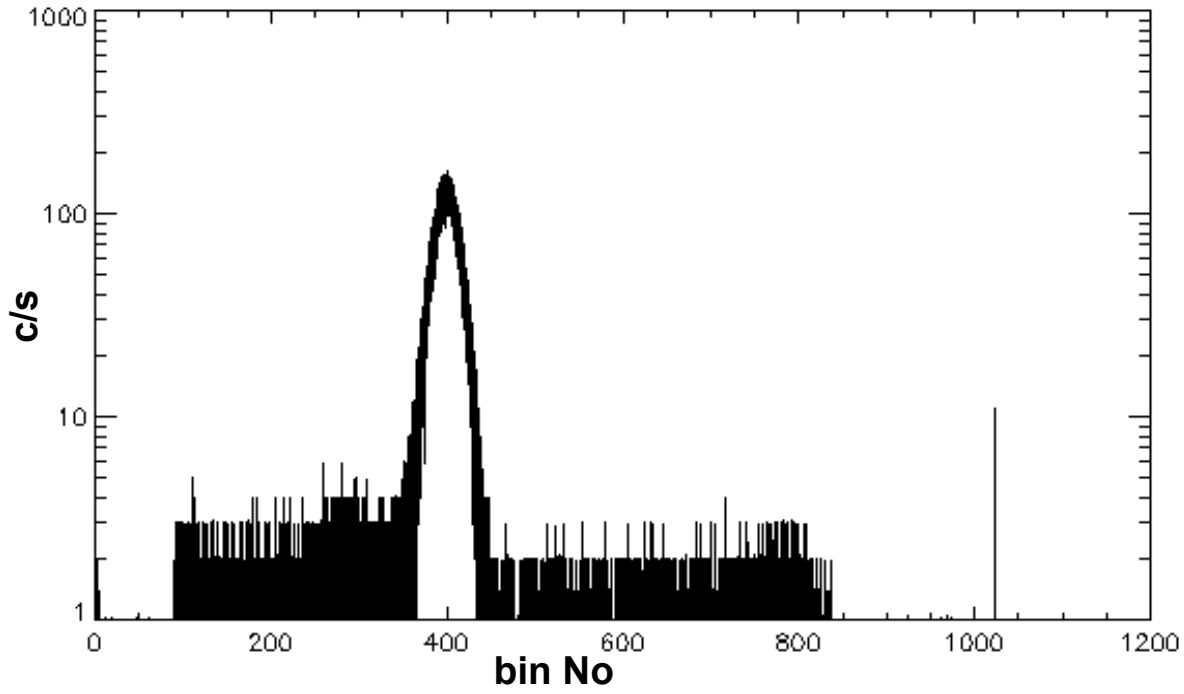

1

n 114
kanal A D1 1.8keV 5000cts
effective exposition 117.24272 s

T:\SPHINX-F\BESSY\BESSY_CAL_DATA_GOOD\kanal_A_Si_cristal\D1\SpX20080226134503.fts.gz




15




n 120

kanal A D1 5.9keV 5000cts

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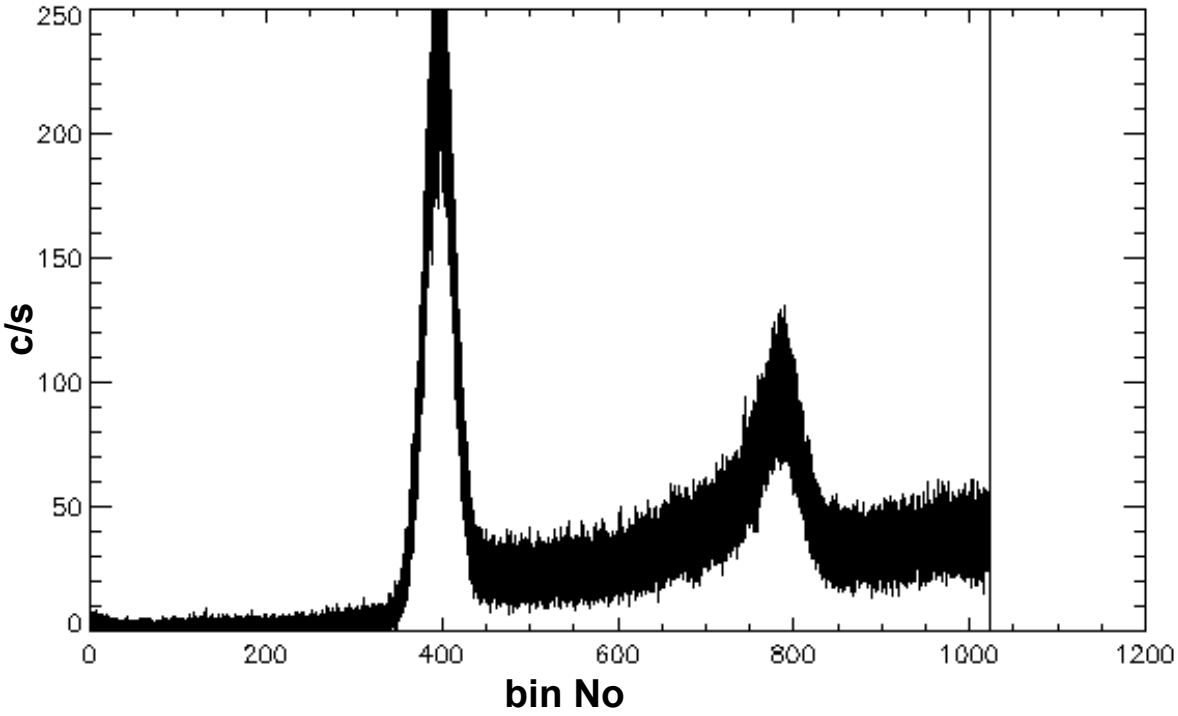
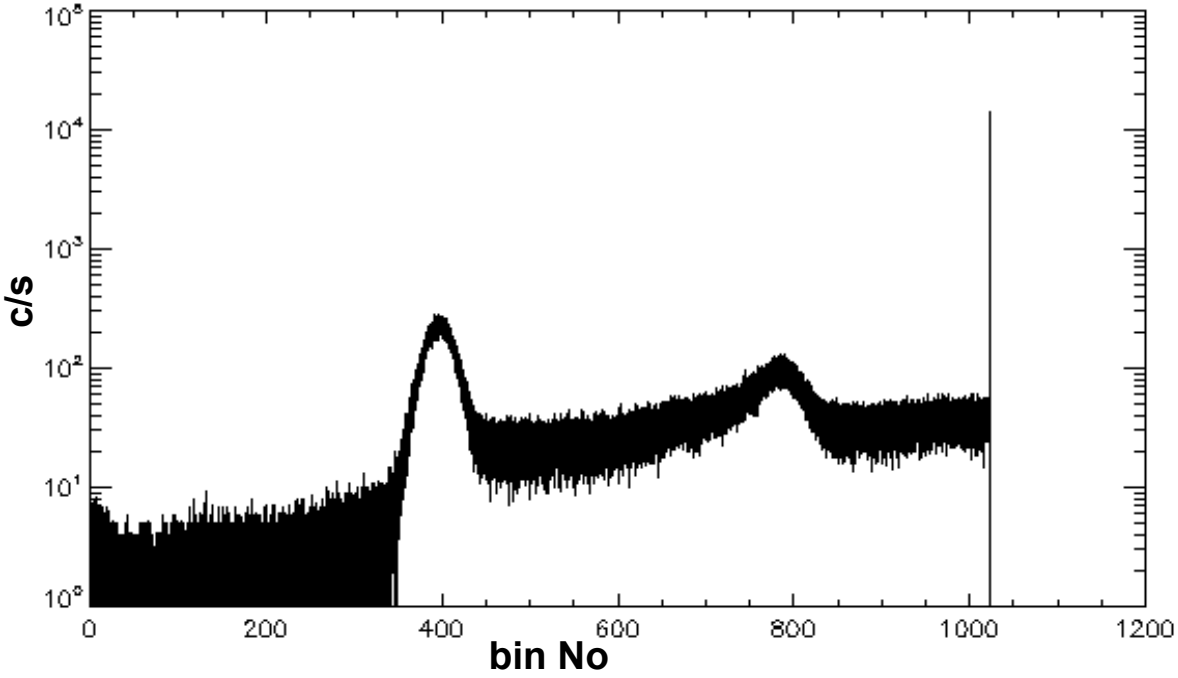



11

n 117
kanal A D1 5.9keV 70000cts
effective exposition 128.98830



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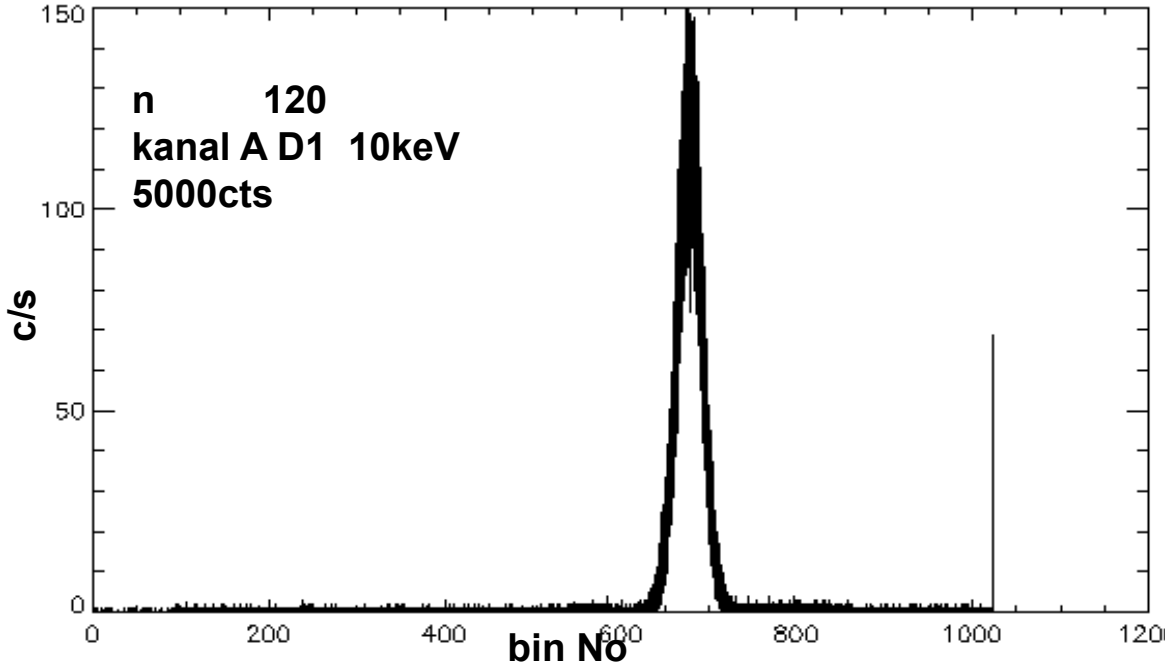
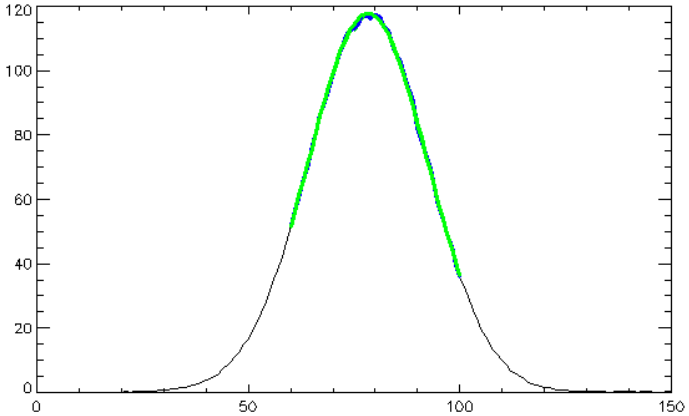
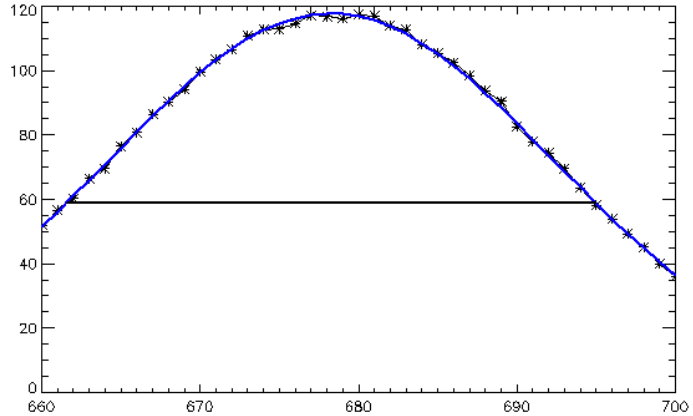
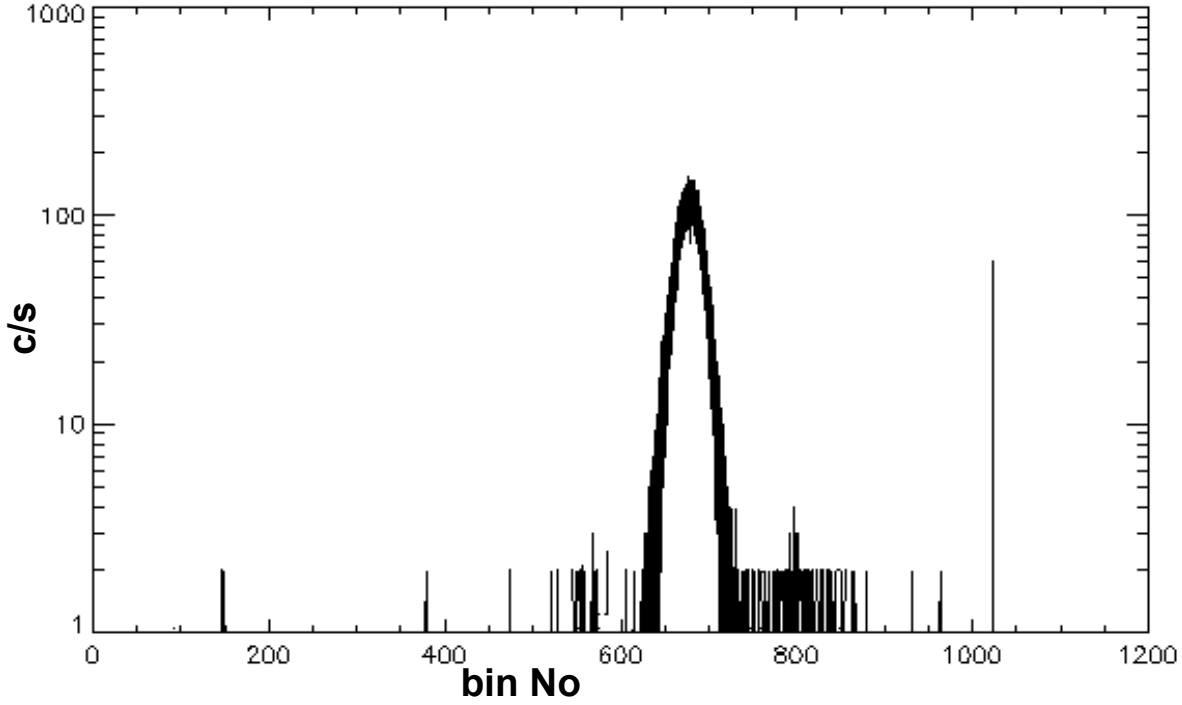


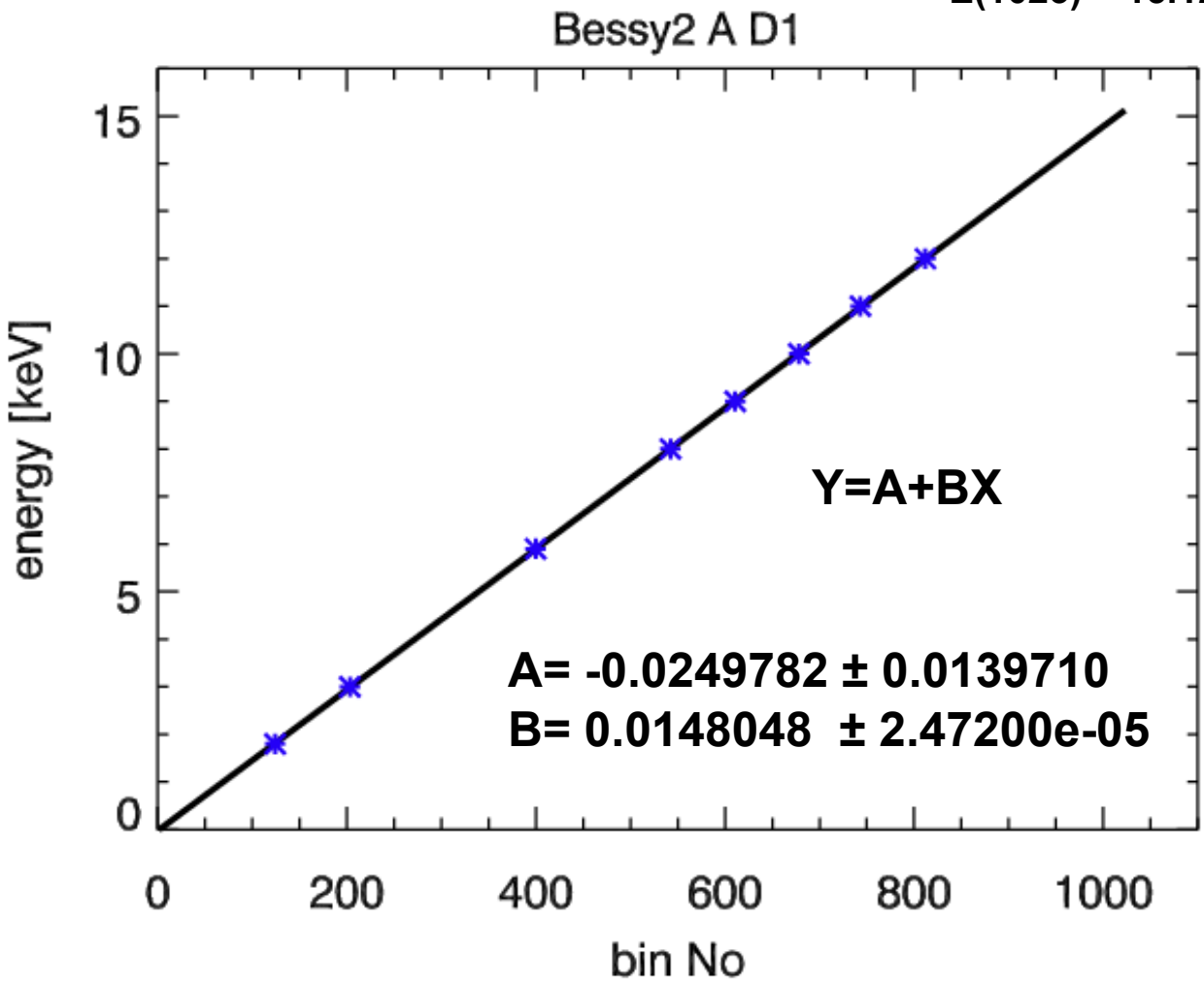





position 678.272 +/- 0.242998
fwhm 33.3993 +/- 0.716766

Szerokosci 1-3

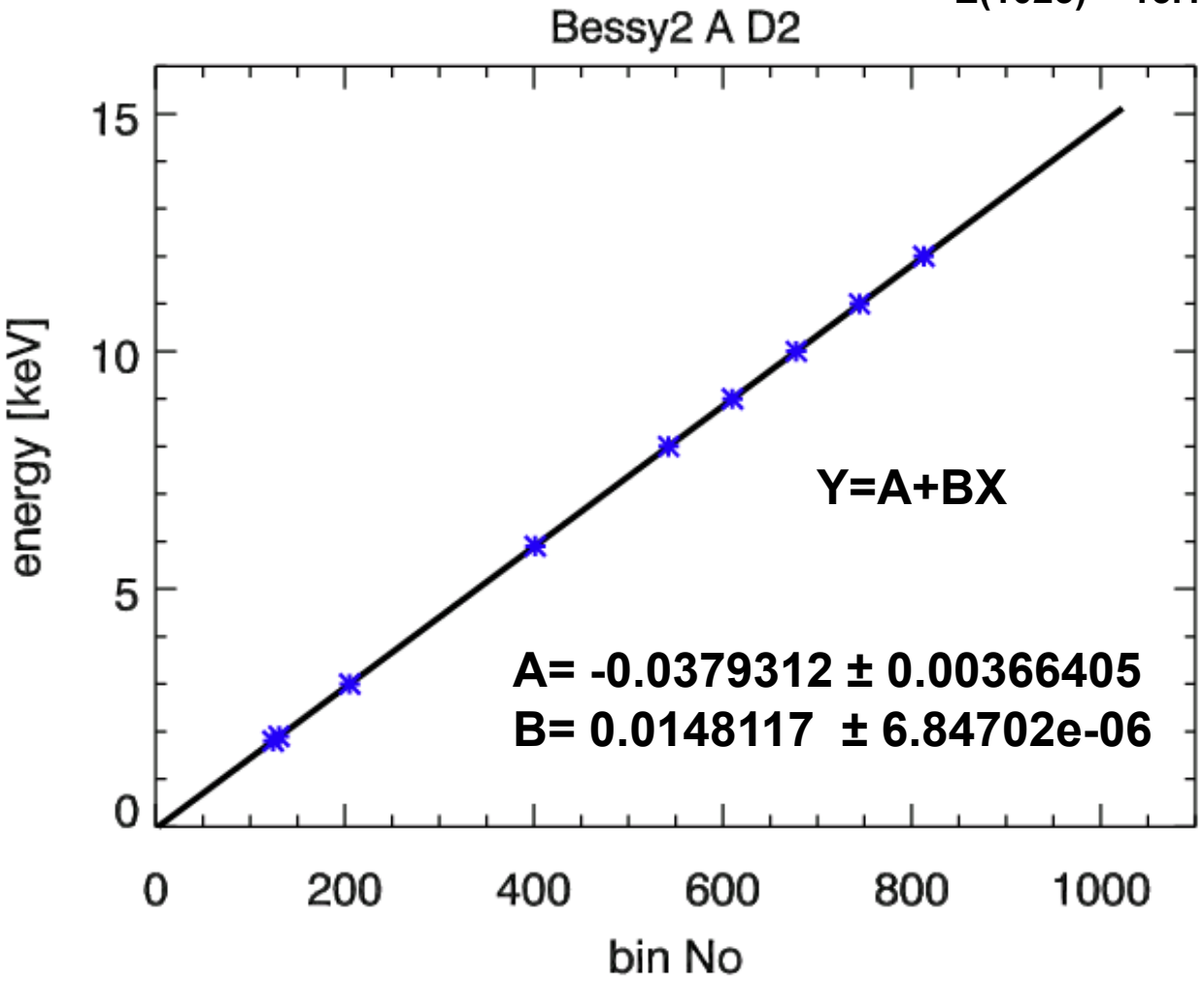
E(1023) = 15.1204 keV




E(0) = -0.0249782 keV

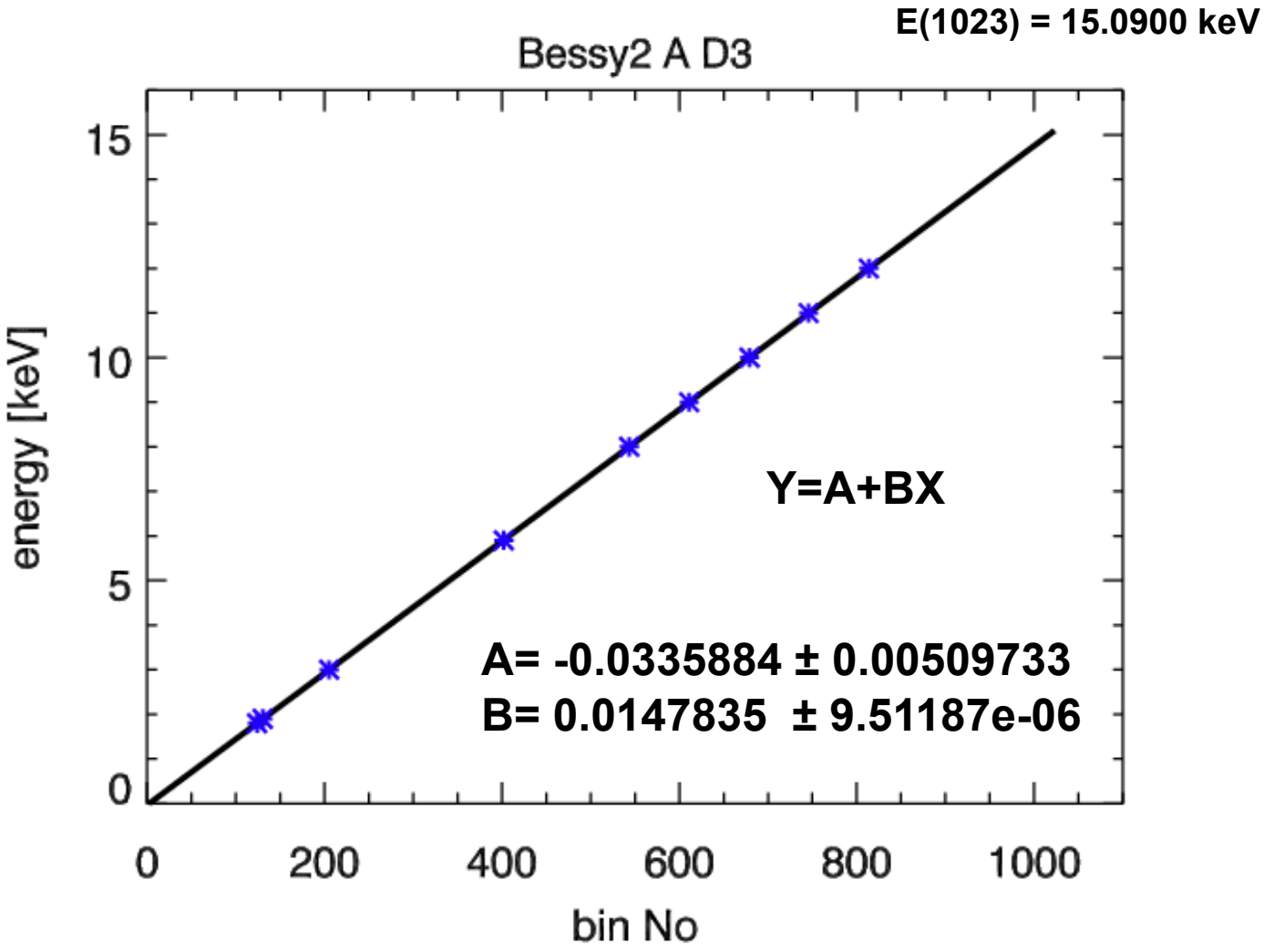
Szerokosci 1-2

E(1023) = 15.1145 keV

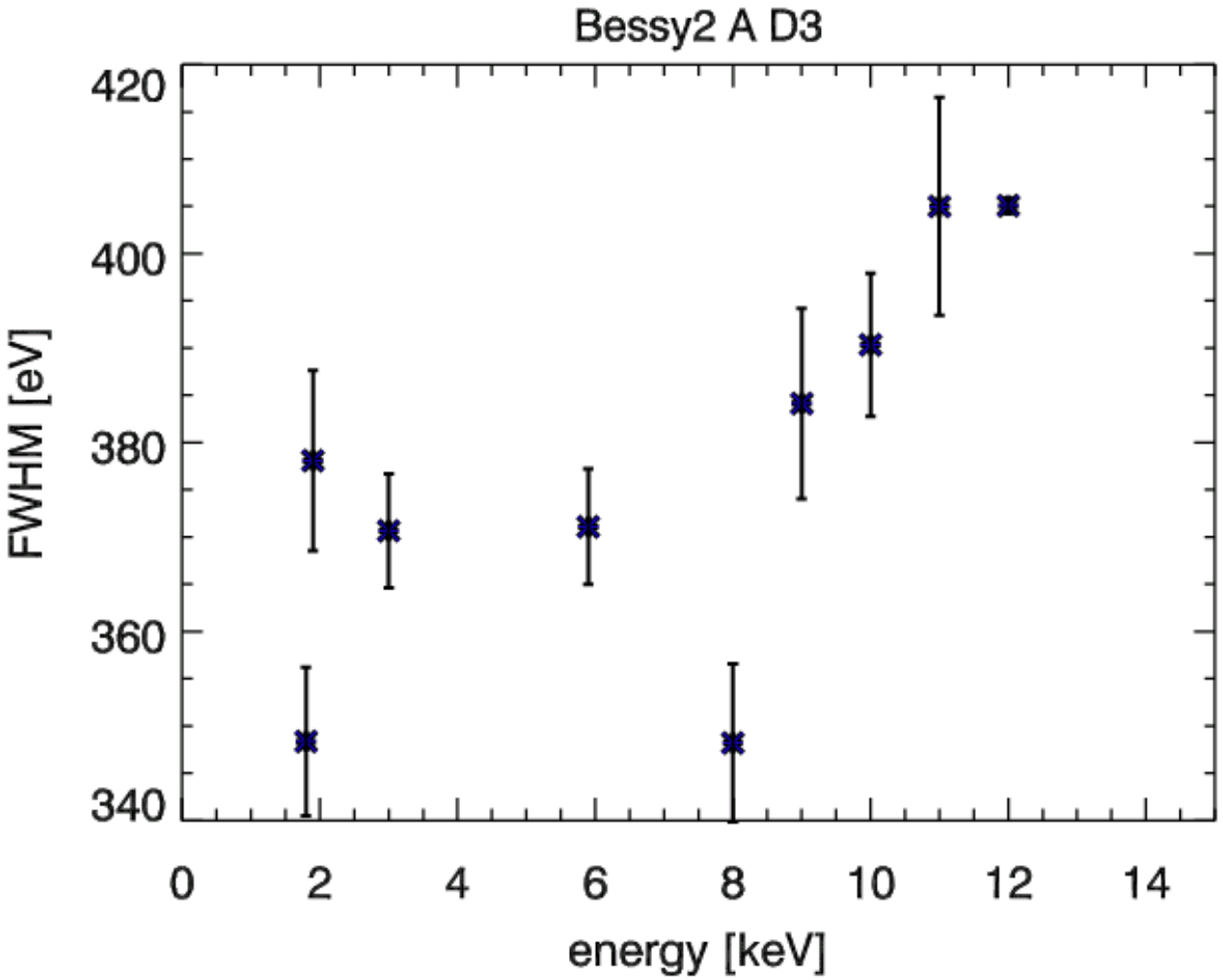


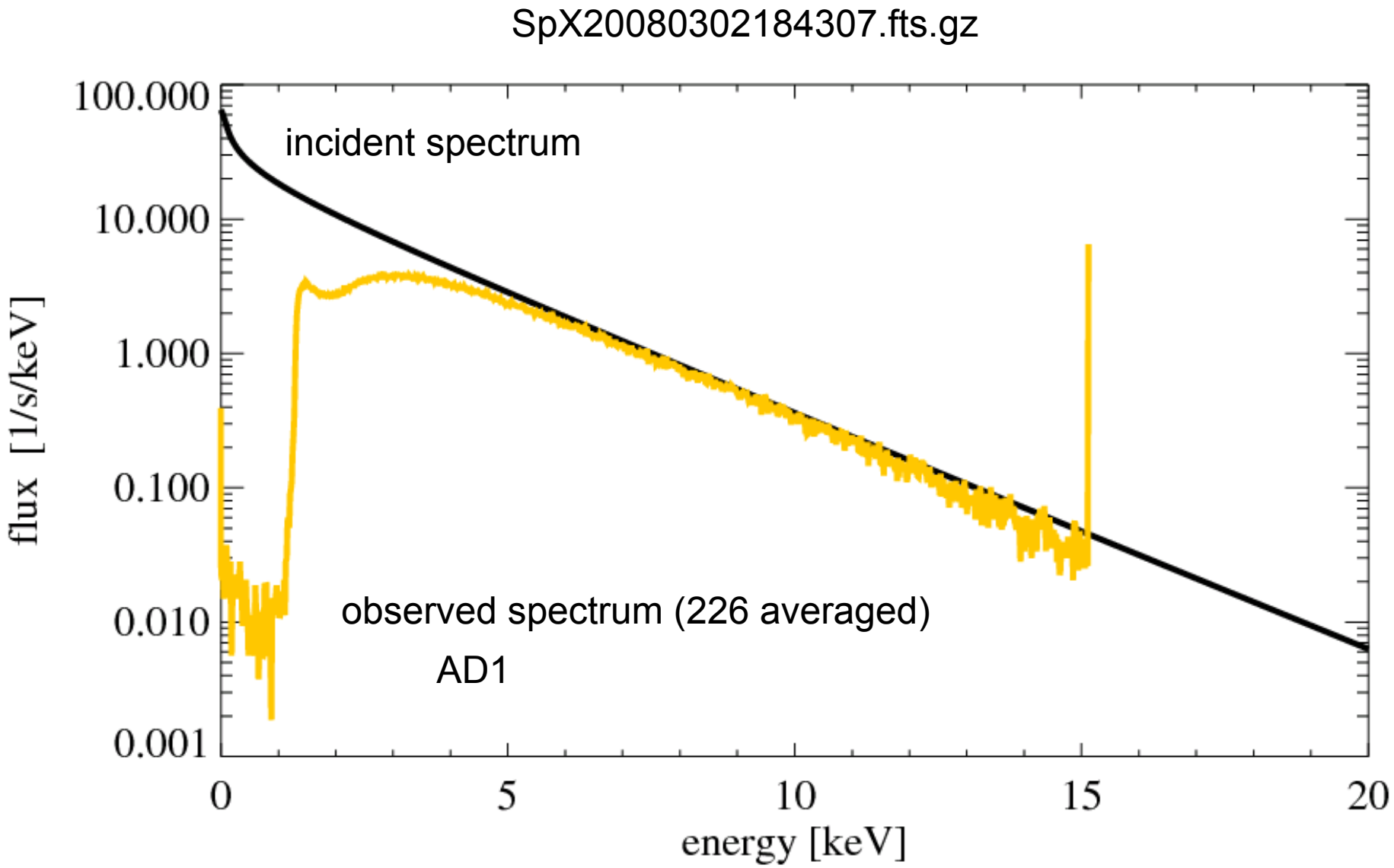

E(0) = -0.0379312 keV

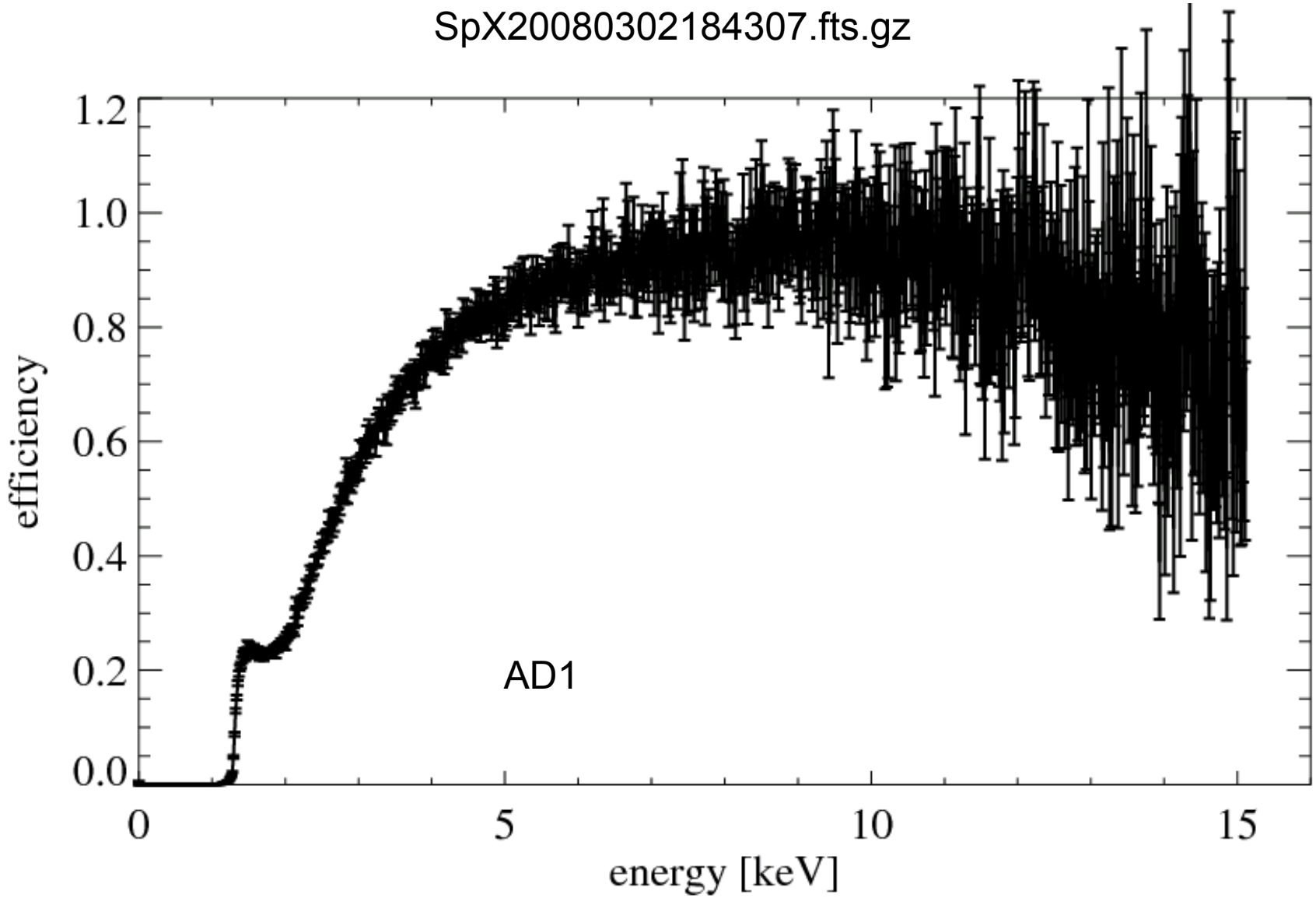
Szerokosci 1-2




**E(0) = -0.0335884 keV**


Bessy2 A D3
FWHM [eV]
420
400
380
360
340
0
2
4
6
8
10
12
14
energy [keV]


SpX20080302184307.fts.gz
incident spectrum
observed spectrum (226 averaged)
AD1
flux [1/s/keV]
energy [keV]
100.000
10.000
1.000
0.100
0.010
0.001
0
5
10
15
20


SpX20080302184307.fts.gz
efficiency
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
energy [keV]
AD1

# XR-100CR Efficiency Curves

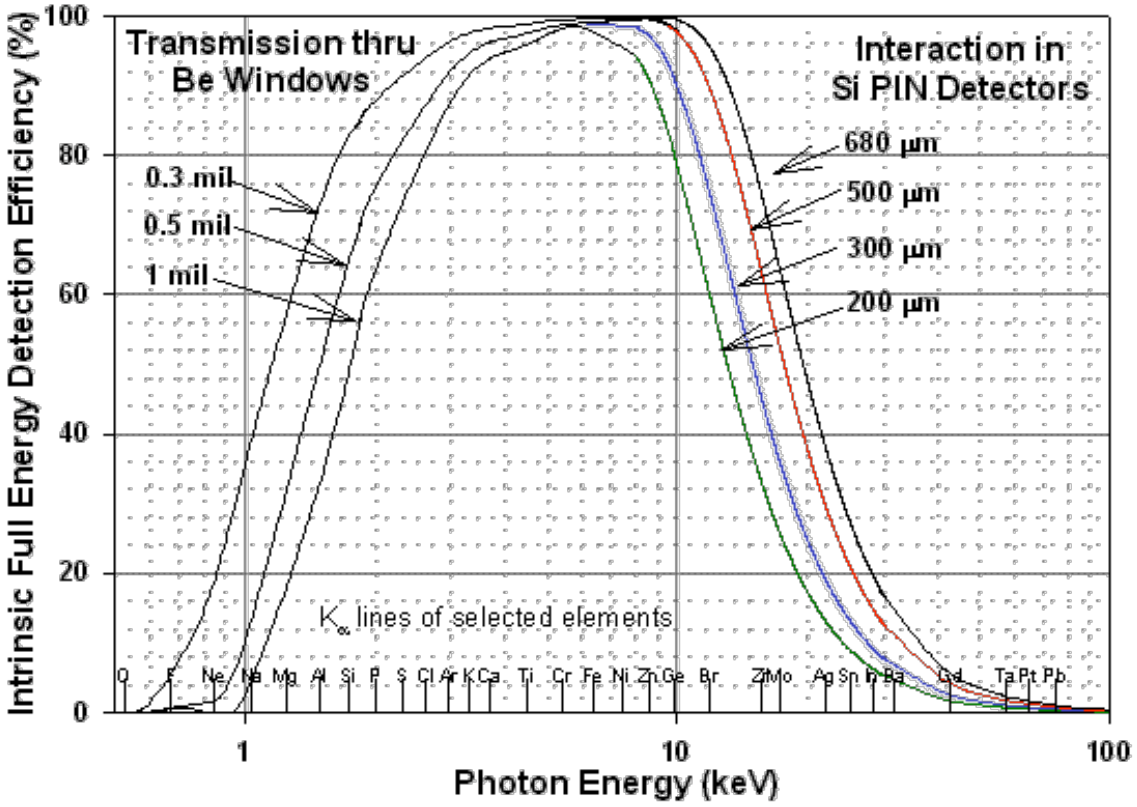
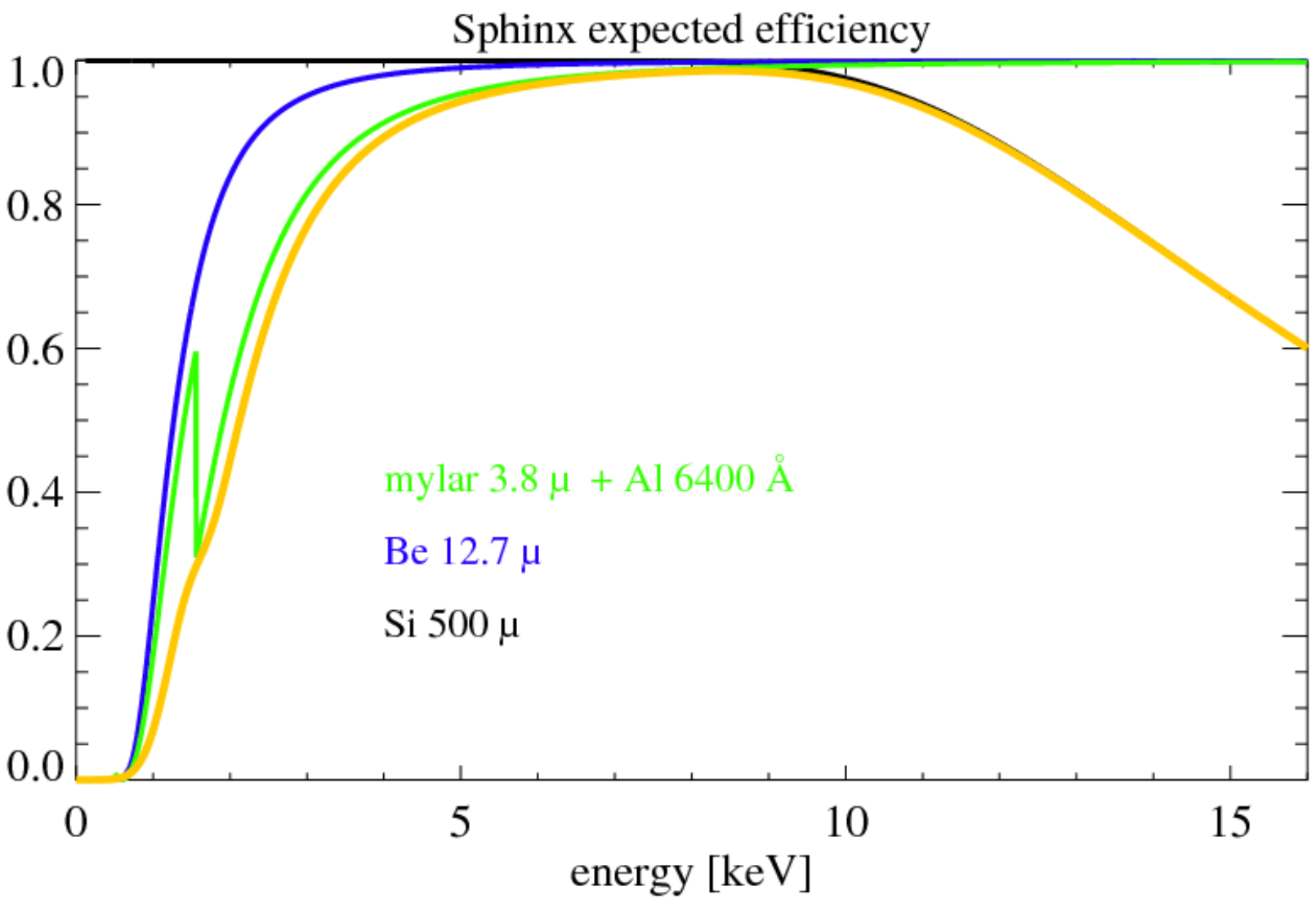
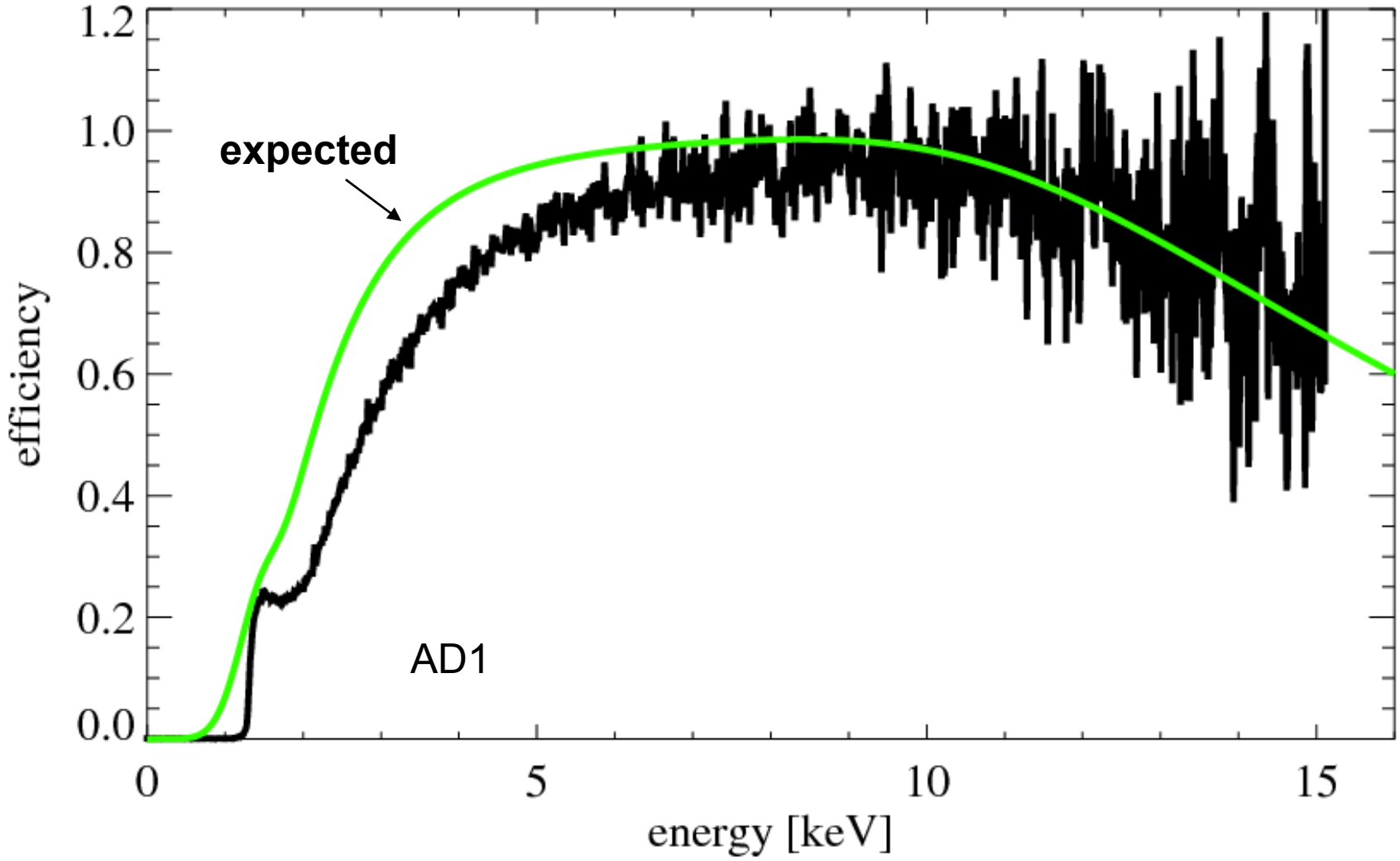
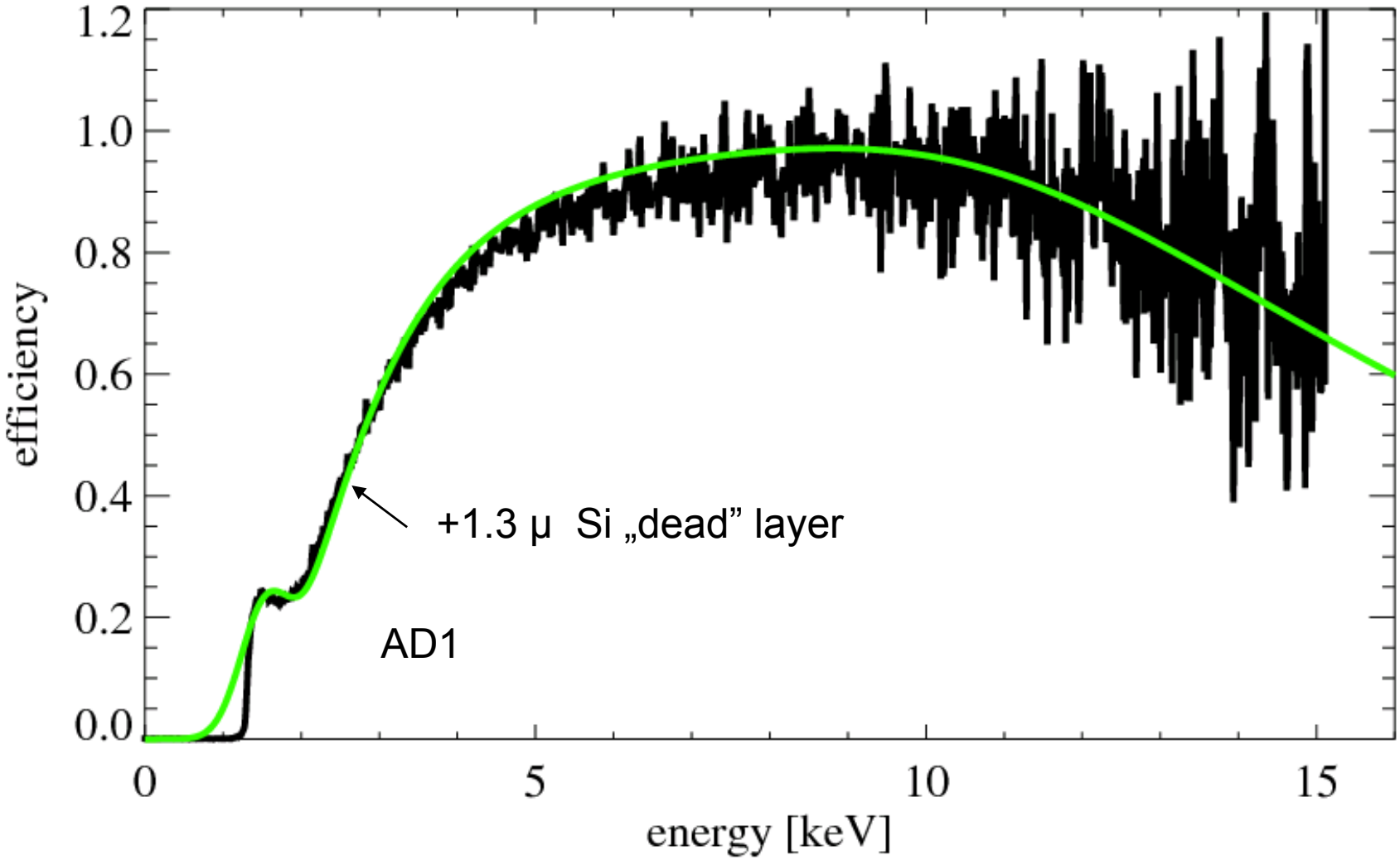
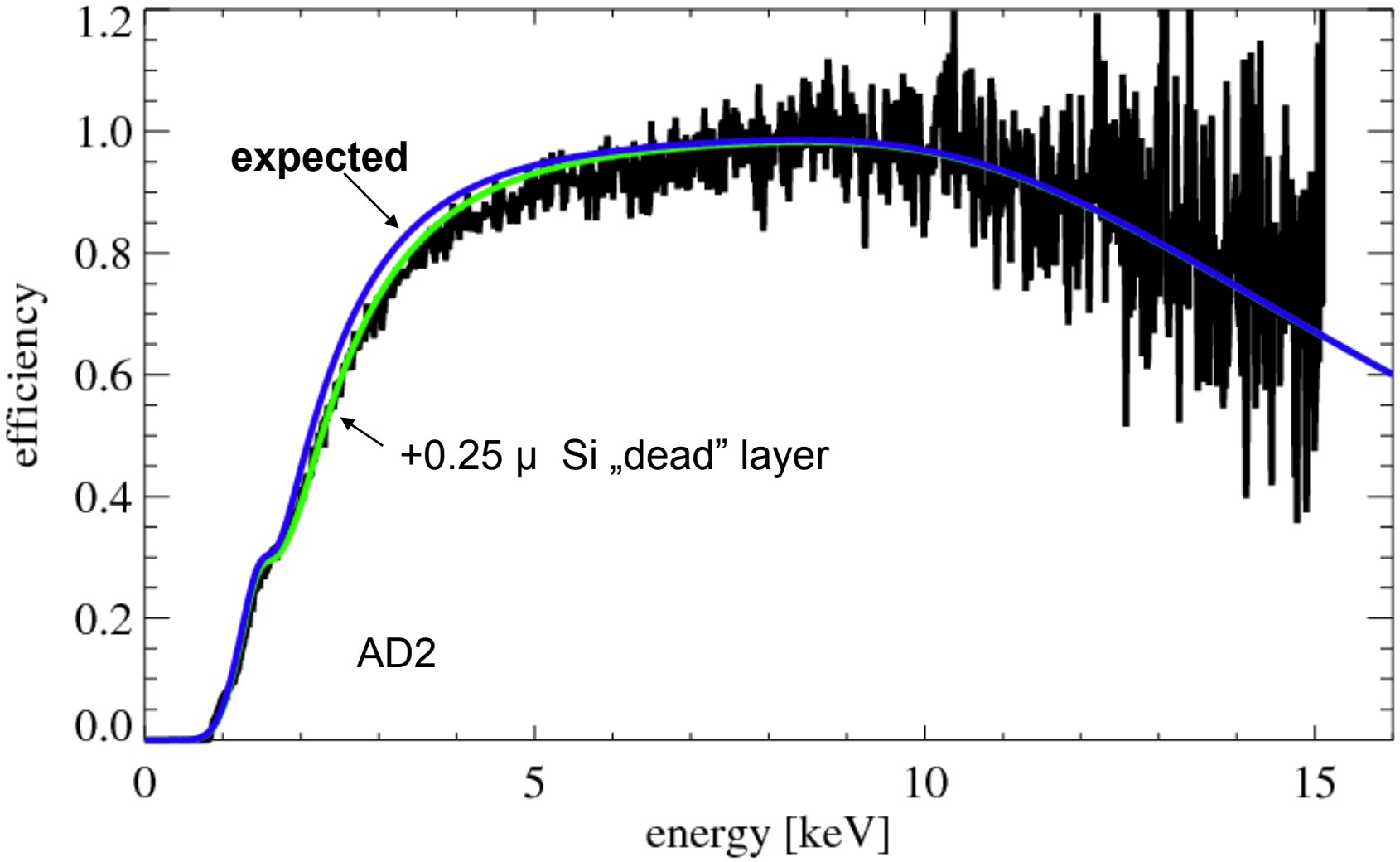



Figure 2 (linear). Shows the intrinsic full energy detection efficiency for the XR-100CR detectors. This efficiency corresponds to the probability that an X-ray will enter the front of the detector and deposit all of its energy inside the detector via the photoelectric effect


Sphinx expected efficiency
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
energy [keV]
mylar 3.8 µ + Al 6400 Å
Be 12.7 µ
Si 500 µ


1.2
1.0
0.8
0.6
0.4
0.2
0.0
efficiency
expected
AD1
0
5
10
15
energy [keV]


efficiency
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
5
10
15
energy [keV]
+1.3 μ Si „dead" layer
AD1


1.2
1.0
0.8
0.6
0.4
0.2
0.0
efficiency
expected
+0.25 μ Si „dead" layer
AD2
0
5
10
15
energy [keV]