MOS / PN CROSS COMPARISON

N. La Palombara & S. Molendi
IFC Milano

ANALYSIS OF

N132D

DATA

Data reduction was fully repeated with SAS current version (5.0.1)

MOS

- Mode: Large Window
- Total exposure: 58.5 ks (MOS1), 43.2 ks (MOS2)

PN

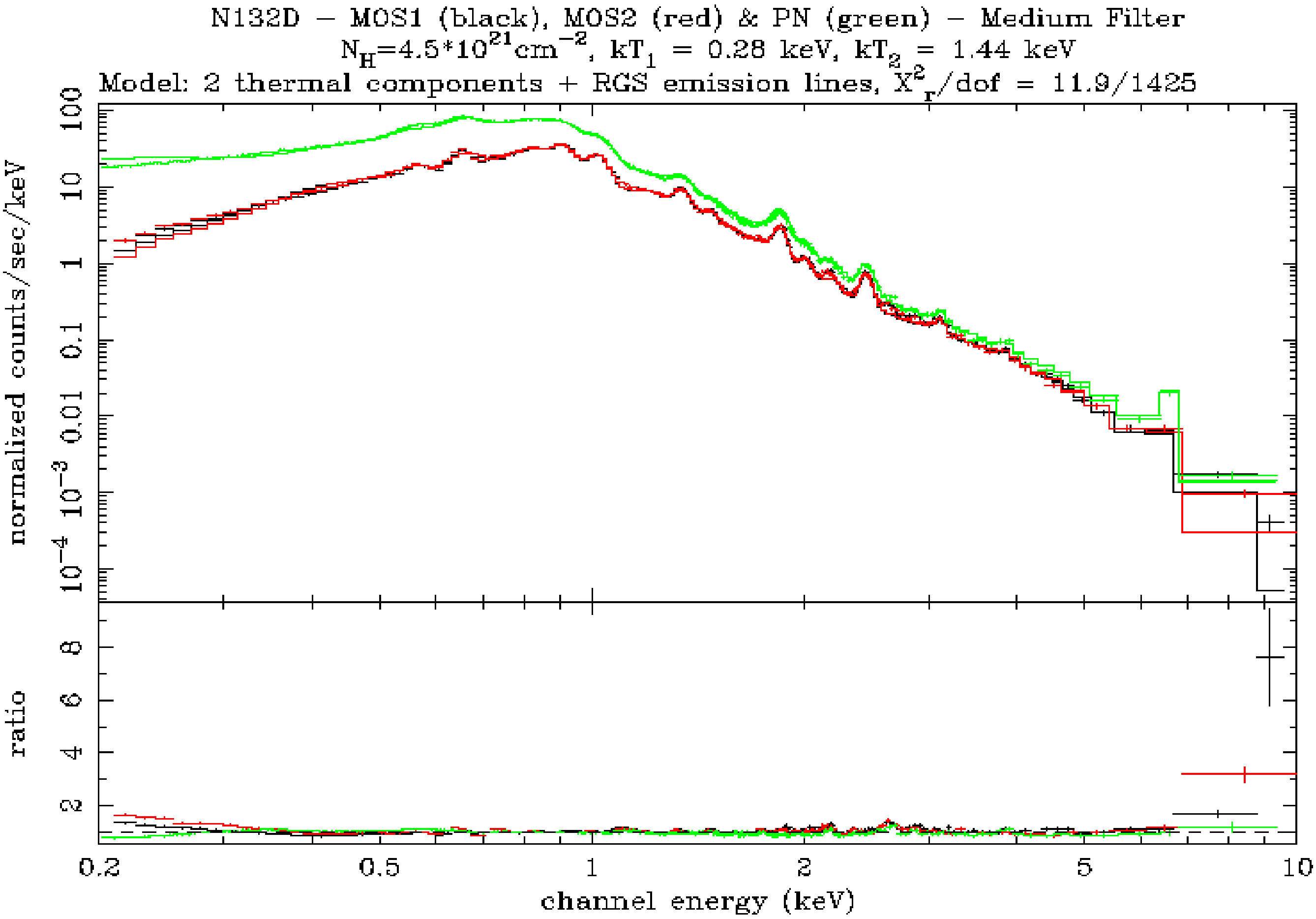
- Mode: Full Frame
- Total exposure: 25 ks

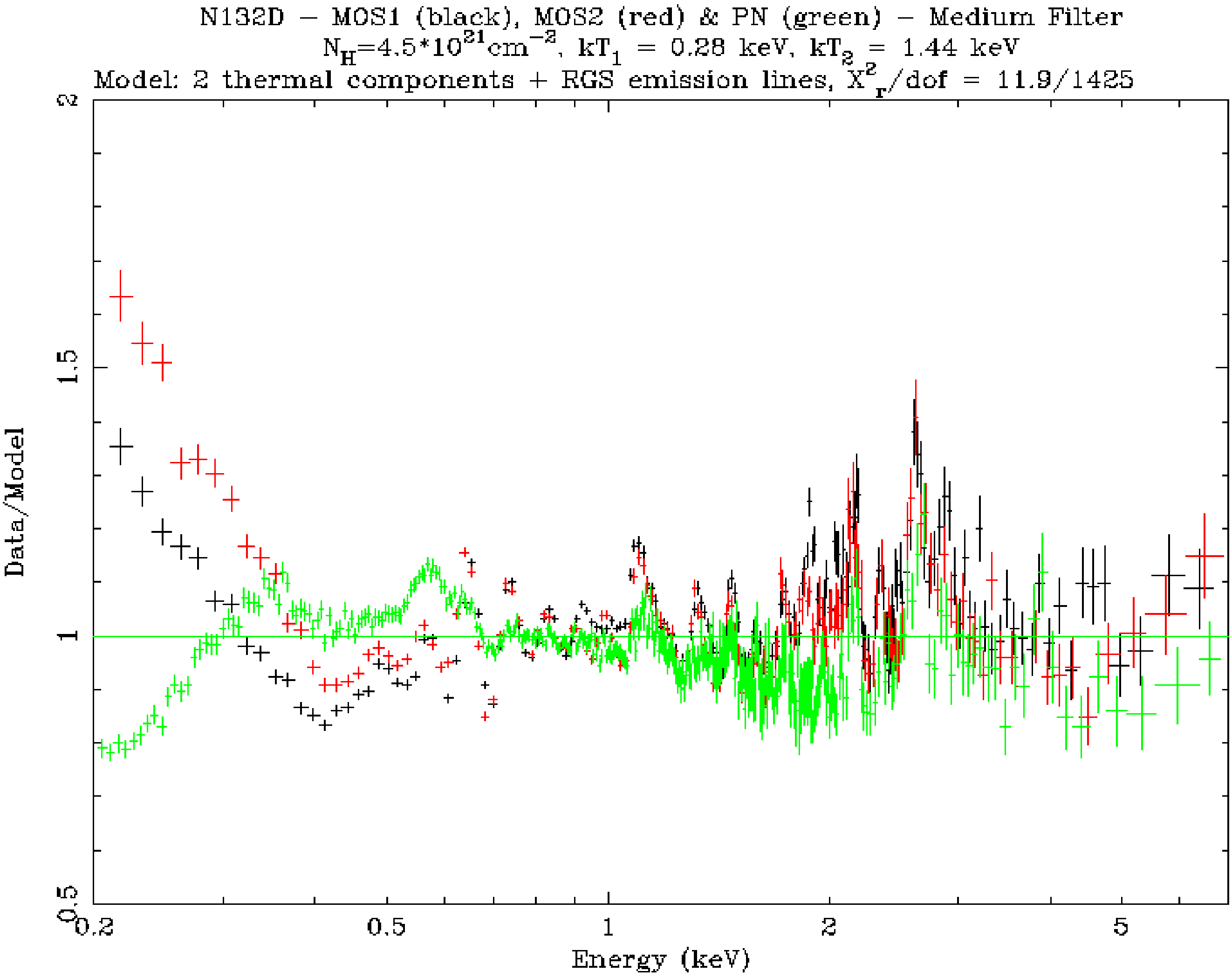
In all exposures the Medium filter was used

SIMULTANEOUS FIT

MOS1, MOS2 and PN spectra are fitted with the same emission model (equal parameters for the two datasets) BUT we allow for a variable cross-normalisation factor

Emission lines observed by RGS are superimposed to two thermal components.





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RESULTS

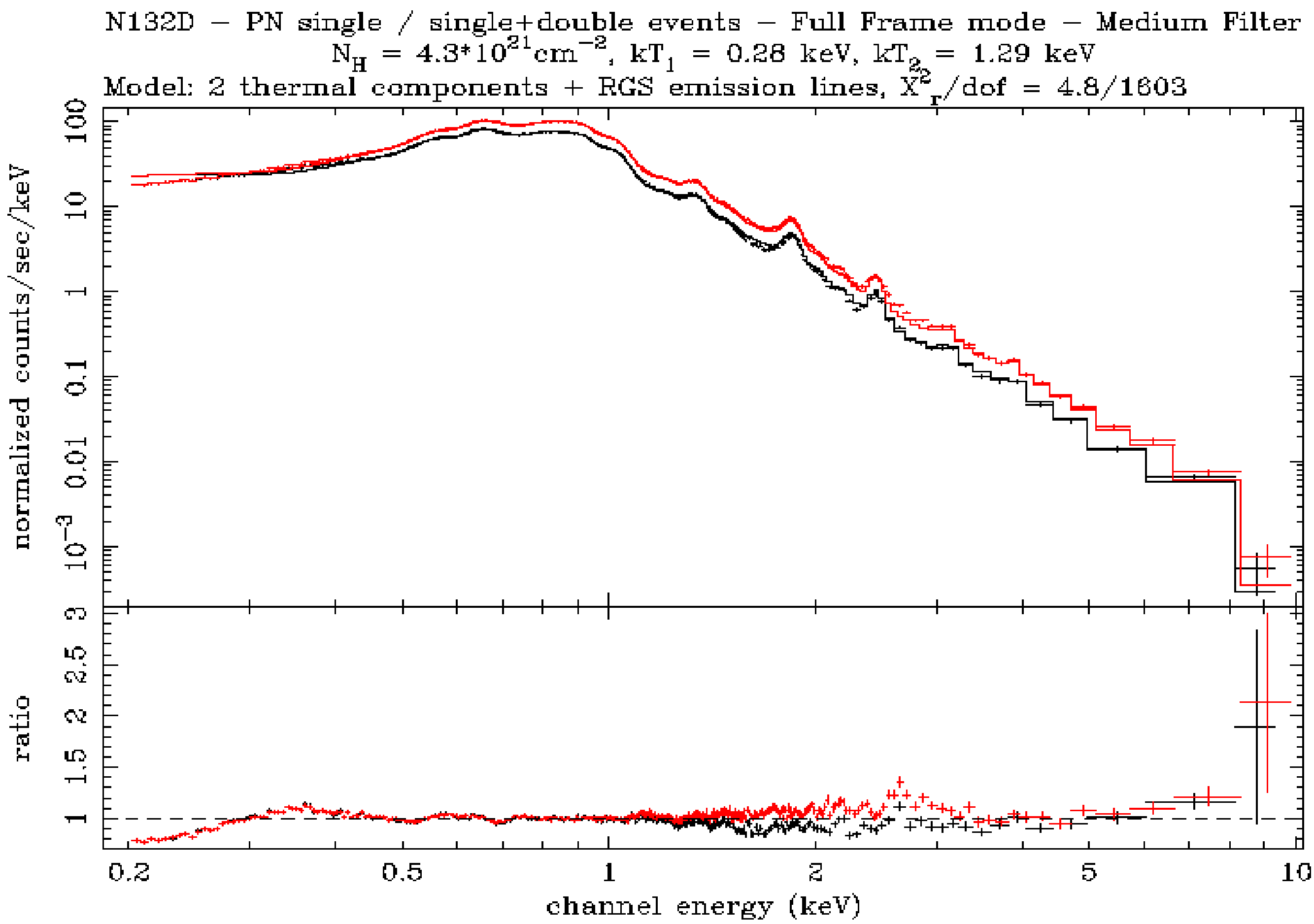
- Count statistic do not allow a good fit for energies above 7 keV
- Emission model broadly traces data between 0.3 and 7 keV, but with significant MOS and PN data separation below 0.7 keV (PN data are above MOS data)
- At the lowest energies PN data fall below the model, whereas for MOS the opposite is true (especially for MOS2)
- Between ~1 and ~3 keV PN data are below MOS data

PN SINGLE/DOUBLE EVENTS

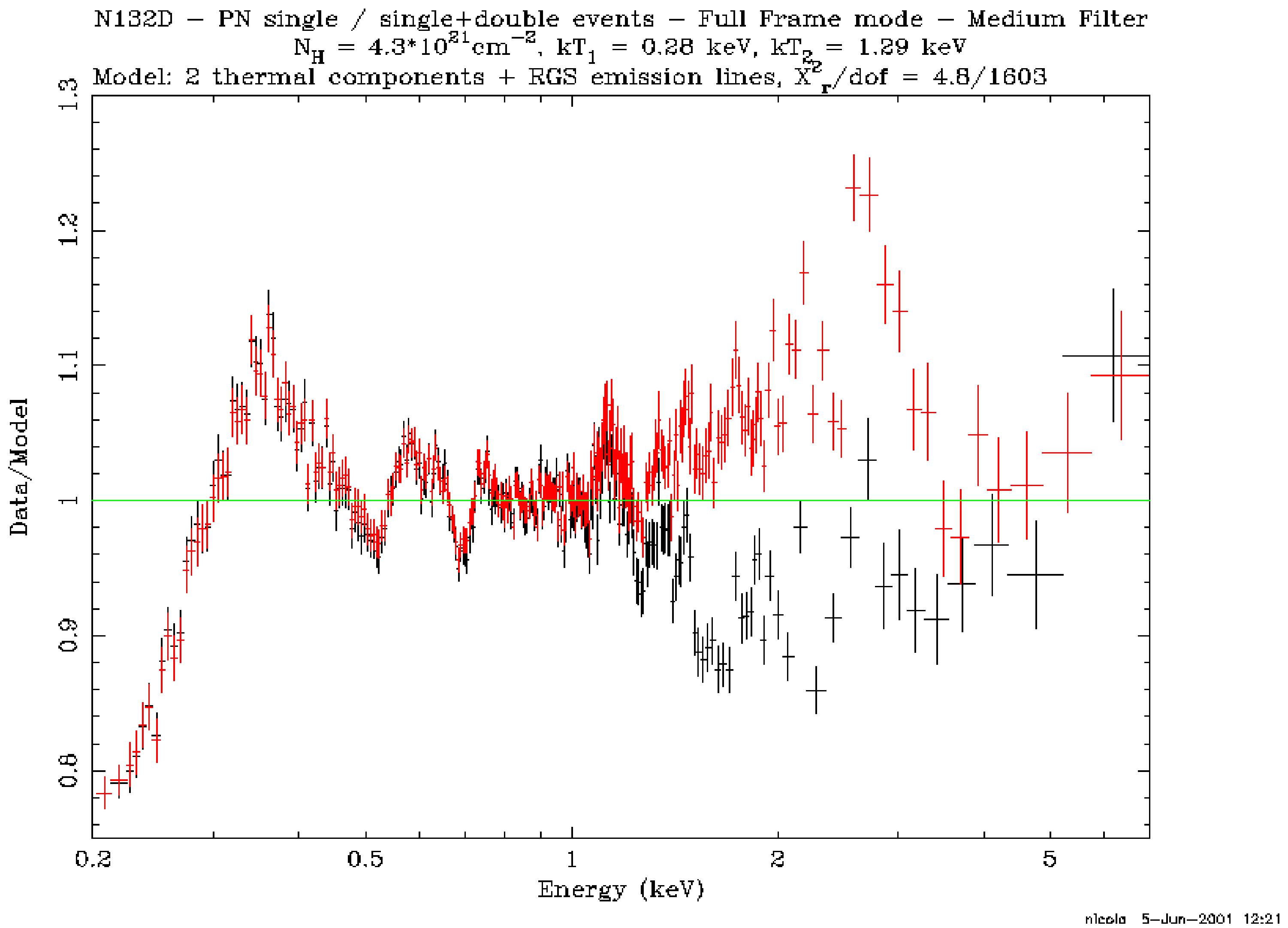
Two different spectra were accumulated on PN data:

- with only single events (pattern = 0)
- with both single and double events (pattern from 0 to 4)

We performed a simultaneous fit of both the spectra, with the same emission model. We used the same model type of the previous analysis.



N132D – PN single / single+double events – Full Frame mode – Medium Filter
$N_H = 4.3*10^{21} cm^{-2}$, $kT_1 = 0.28$ keV, $kT_2 = 1.29$ keV
Model: 2 thermal components + RGS emission lines, χ^2_r/dof = 4.8/1603
normalized counts/sec/keV
ratio
channel energy (keV)



N132D – PN single / single+double events – Full Frame mode – Medium Filter
$N_H = 4.3*10^{21} cm^{-2}$, $kT_1 = 0.28$ keV, $kT_2 = 1.29$ keV
Model: 2 thermal components + RGS emission lines, χ^2_r/dof = 4.8/1603
Data/Model
Energy (keV)
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RESULTS

- There are no significant discrepancies between single and single+double events below 1 keV
- At energies higher than 1 keV a sharp separation between the two spectra is found. Differences up to 20 % are observed.
- For both spectra it is not possible to obtain a good fit at the lowest energies (below 0.5 keV)