A new SAS background task
Why a SAS background task?

- Point sources in FF modes: Source and background regions could be well defined. Background subtraction possible.

- MOS SW mode: No background region in central CCD, but in peripheric CCDs. Background subtraction possible.

- PN SW: Could be very difficult to define background region. For very bright sources no background in SW area.

- Extended sources: If diameter of the source > FOV definition of background region impossible.

  ➔ background model needed.
Examples
Working scheme for PN FF/MOS

• Get particle+electronic background from out-FOV regions. (Sufficient statistics for short observations?)

• Scale particle background region to user defined background region.

• Subtract particle bkg from user defined bkg to get photon background.

• Correct photon background for vignetting effects.

• Add corrected photon bkg and particle bkg to total background.

• Scale total background to the user defined source region.

➡ Implementation as SAS task.
PN SW / Extended sources

- No out-FOV area: Template for particle background needed.

- Investigate rules when local background is available:
  - Source brightness: Possible count rate limit.
  - Position of the source inside the small window area.

- No local background available: background template needed.
  - Template for particle background.
  - “Background button”
  - Template for photon background.
Problems of background templates

• Templates could be extracted using XMM data archive.

• Background is a composite of various components:
  – Electronic noise, proton flares, cosmic particles, CCD fluorescence, cosmic photon background

• Each component can show different spectral, temporal and spatial variability (see results of former background workshops).

  ➔ Good understanding of each background component is needed to understand how successful these templates can be used and how these templates can be used successfully.