

Mock Galaxies README file - 22 Jun 2020 -

The following mock catalogs of non-active galaxies is made available in the SIMPUT format to allow straight simulations of X-ray emitting, non-active galaxies with the SIXTE tool (Dauser et al. 2019; see also <https://www.sternwarte.uni-erlangen.de/research/sixte/> for all the technical details on SIXTE). It has been used by Marchesi et al. 2020 to simulate surveys with Athena and with the AXIS probe. Please see that paper for additional information.

galaxies\_a1deg2\_sixte.fits :

the mock is derived by interpolating between the peakM and peakG model curves for X-ray number counts of non-active galaxies by Ranalli et al. 2005 (see the general README file on the webpage). Non-active galaxies have been simulated down to a 0.5-2 keV flux limit of  $1E-20$  erg/s/cm<sup>2</sup>. The galaxy surface density is  $\sim 294,000$ /deg<sup>2</sup>. In this version of the mock, we do not associate a redshift and luminosity to the sources.

**IMPORTANT:** to work within SIXTE, the names of column 1 to 9 should not be modified. The spectrum spec\_gal\_pow.fits needs to be located in the same directory of the mock catalog.

## Column description

**Column 1: SRC\_ID.** A numerical identifier.

**Column 2: RA.** Source Right Ascension. It ranges between -0.5 and 0.5 deg.

**Column 3: DEC.** Source Declination. It ranges between -0.5 and 0.5 deg.

**Column 4: E\_MIN.** Lower energy boundary for the FLUX parameter (see column 6). This value is equal to 0.5 keV for all sources.

**Column 5: E\_MAX.** Higher energy boundary for the FLUX parameter (see column 6). This value is equal to 10 keV for all sources.

**Column 6: FLUX.** Observed source flux in the energy range described by the E\_MIN and E\_MAX columns. This parameter is then used as an input for the SPECTRUM parameter (see column 7).

**Column 7: SPECTRUM.** Spectrum associated to the source. Each source spectrum is modeled with a power law having photon index  $\Gamma=2$ . The Galactic absorption is set to  $1.8E20$  cm<sup>-2</sup>.

**Column 8: IMAGE.** This column describes the extended shape of the source. Since all galaxies are point-like in the X-rays, the value is set to NULL.

**Column 9: LIGHTCUR.** This column can be used to associate to the source a variability profile. This mock does not include variability effects, so the value is set to NULL.

**Column 10: FLUX\_052.** Observed source flux in the 0.5-2 keV band in erg/s/cm<sup>2</sup>.

**Column 11: FLUX\_210.** Observed source flux in the 2-10 keV band in erg/s/cm<sup>2</sup>.

**Column 12: FLAG\_TYPE.** Flag of the source classifier (in this case "Galaxy").