



# testodf

January 12, 2017

## Abstract

Artificially created ODFs to be used for testing.

## 1 Description

This package contains a number of test ODFs that are used in the testing of the XMM SAS.

When working in the SAS environment, the location of a given ODF should be inquired as follows:

```
saslocate lib/testodf/scisimsimple
```

where scisimple is the name of the sought ODF.

The ODFs are generated with scisim-2.1.

### 1.1 scisimsimple

This test ODF contains one X-ray source (1 keV, broadened with a 20 eV Gaussian), and several optical sources. The ODF was generated using the default configuration modes for all of the XMM instruments as provided by SciSim.

### 1.2 scisimquad

This test ODF is an observation of four point sources with an incident angle of 0.05 degrees and positioned in a square. Two have a Gaussian spectrum centered around 1 keV and 100 eV width, and two have a powerlaw spectrum between 10 eV and 10 keV with a slope of -1. Two are point sources, two are extended sources with a radius of 0.01 degrees. Two have a constant flux, one has a sinusoidal flux variation with a period of 10 s and one with a period of 30 s.

These sources are observed during 3 ks with the instrument in the default mode.



### 1.3 `scisimmultimode`

This test ODF contains three exposures, each with a different configuration of the instruments. There is one X-ray source (1 keV, broadened with a 20 eV Gaussian), and several optical sources. The intensity of the X-ray source is modulated with a sinusoid of 10 s period.

The first exposure was generated using the default configuration modes for all of the XMM instruments as provided by SciSim 2.1 (see `scisimsimple`).

In the second exposure EPIC PN is in `primeLargeWindowCentral` mode with the thick filter, EPIC MOS is in `PrimePartialW2` mode with the thick filter, and RFC is high time resolution mode (HTR) with only CCD 5.

In the third exposure EPIC PN is in `FastModeTiming` mode with the thin filter, EPIC MOS is in `FastModeUncompressed` with the thin filter, and RFC is in HTR mode with all CCDs.

### 1.4 `scisimmultiline`

This test ODF is an observation of a point source that is placed on-axis, and whose spectrum consists of 30 lines. Each line has a Gaussian profile; the width is 1/100th of the energy of the center of the peak. This source is observed with all instruments in their 'default' configuration during 10 ks.

### 1.5 `scisimwobble`

This test ODF is a simulation of an observation of a point source. The spectrum is a narrow Gaussian line at 1 keV. The source is located in an arbitrary location in the sky, and the spacecraft is initially pointing towards the source. The spacecraft is drifting slowly away from the source and at the same time some jitter occurs.

### 1.6 `scisimdrift`

This test ODF is an observation of a point source in an arbitrary location in the sky. Its spectrum is a narrow Gaussian at 1 keV. The source is observed for 500 s while the spacecraft pointing is slowly drifting.

### 1.7 `scisimf`

This test ODF is an observation of nine point sources. Five form an F shape, and the other four form a smaller F shape with the middle source of the large F. The cluster extends over 0.25 degrees. Each source has a narrow Gaussian line spectrum, each around its own energy (1 keV, 2 keV up to 5 keV). These sources are observed with a spacecraft that is initially pointing to the source in the center and is drifting slowly during the observation.



## 1.8 scisimwga

The field from the WGAcat x-ray catalogue centred on  $Ra=5.7$  deg,  $Dec=4.5$  deg is simulated with scisim with a position angle of 0.0 deg. There is a source which is obviously brighter than the rest at  $Ra=5.8338$  deg  $Dec=4.4829$  deg.

## 1.9 scisimngc2516

This is a simulation of an observation of the cluster NGC2516 observed for 10 ks with the instruments in their default configuration.

## 1.10 scisimlong

This test ODF contains a model for NGC4472 and several optical sources. These sources are observed for 70 ks. All instruments are in the default configuration mode as provided by SciSim.

## References