conv_reg

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Abstract

This task converts region descriptors from RA and Dec coordinates DETX and DETY for the individual EPIC detectors.

1   Instruments/Modes

Instrument	Mode
EPIC	Imaging

2   Use

pipeline processing	no
interactive analysis	yes

3   Description

conv-reg creates region descriptions in detector coordinates from input regions in RA and Dec. It operates in three modes where 1) region input and output files are used, 2) ascii file lists of region descriptors are both input and output, and 3) region descriptors for individual regions are input on the command line and output on the screen.

Warning and requirements: *conv-reg* is part of the package *esas*, integrated into SAS, but can be used as a general tool.

4   Parameters

This section documents the parameters recognized by this task (if any).

Parameter	Mand	Type	Default	Constraints
detector	yes	string		

The instrument identifier (EMOS1, EMOS2, or PN).

mode	yes	int		

conv_reg operational mode:

mode=1 – region fits files are both input and output

mode=2 – ascii files with region parameters are both input and output

mode=3 – command line input of individual region parameters and screen output

imagefile	yes	string		

Filename image in sky coordinates – used to extract observation position angle.

ra	yes	real		none

mode=3 only RA input

dec	yes	real		none

mode=3 only Dec input

shape	yes	string		none

mode=3 only region shape input, CIRCLE—ELLIPSE

radius	yes	real		none

mode=3 only, shape=CIRCLE radius for circular region input

semimajor	yes	real		none

mode=3 only, shape=ELLIPSE semimajor axis (in arc minutes) for elliptical region input

semiminor	yes	real		none

mode=3 only, shape=ELLIPSE semiminor axis (in arc minutes) for elliptical region input

rotangle	yes	real		none

mode=3 only, shape=ELLIPSE rotation angle (in degrees) for elliptical region input

inputfile	yes	string		

mode=1,2 only input file name

outputfile	yes	string		

mode=1,2 only input file name

5 Input Files

All modes require an input image which is used to extract the position angle of the observation, e.g., for ESAS processing and MOS1 the file mos1S001-obj-image-sky.fits can be used.

Mode=1 – a modified FITS region file is used to input the region information. The region file should have the following columns: SHAPE(16A), RA(1E), DEC(1E), RADIUS(2E), ROTANG(1E), COMPONENT (iJ, typically=1). For SHAPE=CIRCLE values, the RADIUS the radius, but for SHAPE=ELLIPSE, the RADIUS is the semimajor and semiminor axes in the 2 elements. Editing of the file can be done with the FITS file viewer fv. The values for the R column should be in arc minutes while the values for the ROTANG column should be in decimal degrees. Deriving these parameters can be done through ds9 and creating the desired regions and then looking at the region information. Currently only circular and elliptical regions are supported.

Mode=2 – an ASCII file with the same data and input units as for the input file of mode=1. The input are in free format with the order of [shape ra dec radius] for circular regions and [shape ra dec semimajor semiminor rotang] for elliptical regions.

6 Output Files

Mode=1 – a FITS region file in detector coordinates which can be used directly in xmmselect or evselect. Note: including data from a list of regions is slightly tricky. For both excluding and including data the the "not" should be used for the shape. In this case, the listed regions are excluded if the selection expression is region(outputfile). To include only the data from the listed regions the the selection expression is "nottted", i.e., !region(outputfile).

Mode=2 – an ASCII file with the region descriptors in detector coordinates.

7 Algorithm

8 Comments

References