



AHELP for CIAO 3.4

dmimfiltering

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Synopsis

The CIAO filtering syntax for images

Syntax

```
[filter nameA=min1:max1,nameB=min2:max2]
[filter #1=min1:max1,#2=min2:max2]
[min1:max1,min2:max2]
[filter nameA=shape(parameters),nameB=REGION(region_filename)]
[filter name=REGION(region_filename)][opt full]
[filter @filter.lis]
[shape(parameters)]
```

Description

This help file is split up into the following sections:

- 1. Image filtering on logical coordinates
- 2. Image filtering on physical coordinates
- 3. Image filtering on world coordinates

See `ahelp dmimages' for information on the logical and physical coordinate systems used for images.

1. IMAGE FILTERING ON LOGICAL COORDINATES

To filter an image on its logical coordinates,

```
dmcopy "im.fits[#1=257:512,#2=1:100]" subset.fits
```

pulls out a 256 x 100 subset of the image.

```
dmcopy "im.fits[(#1,#2)=circle(145,356,25)]" circle.fits
```

sets everything outside the specified circle to zero (unless the BLANK keyword is defined in which case that value is used). The default behaviour of a filter like this is to also shrink the resulting image to be as small as possible surrounding the circle. To suppress this behaviour, and get a big, almost empty, image (the same size

as `im.fits`) with a small circle in the middle, use the "opt full" modifier as shown below:

```
dmcopy "im.fits[#1,#2]=circle(145,356,25)][opt full]" circle.fits
```

One can explicitly set the value to be used for pixels lying outside the filter using the 'opt null' directive, e.g.

```
dmcopy "im.fits[#1,#2]=circle(145,356,25)][opt null=-100]" circle.fits
```

2. IMAGE FILTERING ON PHYSICAL COORDINATES

To filter on the original physical coordinates, we refer to the physical axis names:

```
dmcopy "im.fits[x=4096.5:4213.5,y=4142.3:6120.1]" subset.fits
```

You can also use a region filter:

```
dmcopy "im.fits[(x,y)=circle(4096,4096,12)]" circle.img
```

This will give you a square image bounding the given circle, and set to zero all pixels outside the circle. If you wish to mark these pixels as "invalid", you can use the "opt null" syntax described in "ahelp dmopt":

```
dmcopy "im.fits[(x,y)=circle(4096,4096,12)][opt null=-999]" circ2.img
```

Note that not all programs will recognise that such pixels are to be ignored, although both `ds9` and `dmstat` do.

3. IMAGE FILTERING ON WORLD COORDINATES

You can also use world coordinates in a region filter:

```
dmcopy 'im.fits[(x,y)=circle(11:03:28.4,-20:11:23.2,20.1\")] ' circ.img
```

Note: The arcsecond symbol should work on the command line, but you may have problems using the parameter interface (`pset`).

However, you can't use the world coordinates when filtering on a one dimensional range – i.e. `[x=11:03:28.2:11:03:32.1]` won't work, you would have to do use "`(x,y)=rectangle(...)`" instead.

Bugs

See the [bugs page for the Data Model library](#) on the CIAO website for an up-to-date listing of known bugs.

See Also

calibration

[caldb](#)

chandra

[coords](#), [guide](#), [isis](#), [level](#), [pileup](#), [times](#)

chips

[chips](#)

concept

[autoname](#), [parameter](#), [stack](#), [subspace](#)

dm

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URL:
<http://cxc.harvard.edu/ciao3.4/dmimfiltering.html>
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