



## Bugs: regions

A list of bugs fixed in CIAO 3.4 is included at the end of this document.

### Caveats

1. *The parameter interface does not recognize an equals sign inside of (), [], and/or {}.*

For example, in this case:

```
region(srcs.reg[component=1])
```

the parameter interface sees `parameter=value` and attempts to set the "region(srcs.reg[component" parameter to "1]"). If the value of a parameter has an "=" in it, you have to use the name=value syntax:

```
srclist="region(srcs.reg[component=1])"
```

2. *CIAO does not understand the format DS9 uses for writing elliptical annuli or for writing grids of annuli.*

### Bugs

1. *World-coordinate region filters don't work correctly if the EQPOS transform includes a rotation.*

The rotation is not applied when converting the region from world to physical coordinates. In this case, region filters should be written only in terms of physical coordinates (i.e. SKY pixels).

2. *Regions off the image: the Data Model crashes when filtering a region that's completely off the image.*
3. *Using incorrect syntax with the rectangle shape does not fail when filtering.*

For example, setting `xmax > xmin` and/or `ymax > ymin`. Instead it appears that the Data Model simply swaps the min and max values.

4. *If you spatially filter a file with a complicated region and then supply the same region later in the analysis, the second filter may not be applied correctly.*

For example:

```
unix% dmcop y evt.fits[sky=region(complex.reg)][bin sky=1] out.fits
unix% dmstat out.fits[sky=region(complex.reg)] cen-
```

This is due to the fact that the regions applied in the `dmcop y` are recorded in the file `subspace`, and the subsequent tool – `dmstat` in this case – does not combine them with the second (identical) filter correctly. Other tools that take the subspace into account will exhibit this problem as well.

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The example does work for simple regions, e.g. "circle(4096,4096,10)", but the workarounds can still be applied.

### Workarounds:

1. Use "[opt\_update=no]" in the dmcoppy step so that the filter does not get recorded in the subspace. Be aware, however, that this means you lose information on what filters have been applied to the data.
  2. omit the DM filter from the second infile name.
5. *There is a bug in region and range filters.*

This command:

```
unix% dmcoppy "input.fits[sky=circle(4096,4096,100),y=4020:4100,4250,4350]" \
output.fits
```

fails to do the y filter altogether. This bug also applies to exclude filters.

6. *Shapes with different numbers of points (16 May 2007)*

This bug is triggered when the shapes that are being printed don't all have the same number of points (e.g. one is a circle and one is a polygon):

```
% dmmakereg region="circle(1,1,5)+polygon(1,1,2,2,3,3)" ker=ascii out=-
# Region file format: DS9 version 3.0
global color=blue font="helvetica 10 normal" select=1 edit=1 move=1 delete=1 include=1 fixed=0
physical;Circle(1.000000,0.000000,5.000000) #
physical;Polygon(1.000000,1.000000,2.000000,2.000000,3.000000,3.000000,1.000000,1.000000) #
```

The output Circle has the y- position set to 0 instead of 1 (the input value).

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## Bugs fixed in CIAO 3.4

The following is a list of bugs that were fixed in the CIAO 3.4 software release.

1. *Regions off the image: if one region shape is partly off the edge of the image, the DM does not exclude all the regions in the file correctly.*

For example:

```
unix% dmcoppy "expmap.fits[exclude sky=region(holes.reg)]" expmap_holes.fits

unix% cat holes.reg
-circle(4713.138184,3794.545410,11.654875)
-circle(4382.204590,4670.012207,10.183500)
-circle(4136.358887,4525.479492,6.161741)
..etc..
```

### Workarounds:

1. Modify the region file to make it legal by adding the line

```
field()
```

at the beginning, so it reads

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```
field()  
-circle(4713.138184,3794.545410,11.654875)  
-circle(4382.204590,4670.012207,10.183500)  
-circle(4136.358887,4525.479492,6.161741)  
..etc..
```

then invert the filter to be an include instead:

```
unix% dmcopu "expmap.fits[sky=region(holes.reg)]" expmap_holes.fits
```

2. Omit that shape from the region file

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URL:  
<http://cxc.harvard.edu/ciao3.4/bugs/regions.html>  
Last modified: 10 October 2007

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