



Bugs: dmcoords

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

Caveats

1. *dmcoords* does not automatically take into account drifts in the Chandra geometry when calculating sky coordinates.

These drifts were negligible near the beginning of the mission, but have grown to the order of 10 arcseconds and so cannot be neglected. The [Using dmcoords to Convert between CHIP and SKY Coordinates thread](#) shows how to account for this change.

2. **"Target position does not fall on a CCD"**

If you run dmcoords with `infile=""` and try to set the parameters it needs, e.g.:

```
unix% dmcoords infile="" opt=cel ra=<something> dec=<something> \  
      detector=ACIS grating="NONE" sim="120 0 -197" \  
      ra_nom=<something> dec_nom=<something> roll_nom=<something>
```

you will see an error of the form: "Target position does not fall on a CCD." Since the tool has been updated to process [multi-OBI](#) data, it wants more info and doesn't assume certain things as it did in the past.

In addition to the shown parameters, you also have to set `ra_esp`, `dec_esp`, and `roll_esp`. If in doubt about the values, set them to the nom parameter value:

```
unix% pset dmcoords ra_esp=")ra_nom" dec_esp=")dec_nom" roll_esp=")roll_nom"
```

This caveat will only affect a small percentage of users, as most run the tool with an `infile`.

Bugs

1. *Incorrect azimuth and off-axis angle for HRC event files*

A keyword was dropped when filtering columns from HRC evt2 files in the pre-CIAO 3.0 data model. This causes `dmcoords` to not have correct knowledge of the aspect solution; the tool therefore computes an incorrect zero point for the azimuth (ϕ) and off-axis angle (θ).

Workaround:

Use `dmstat` to get the DETX,DETY values:

```
[REDACTED]
```

Bugs: dmcoords – CIAO 3.4

```
unix% dmstat "evt2[sky=region(reg)][cols det]"
```

and then use `dmcoords` to convert these to theta and phi values.

2. *dmcoords* does not correctly calculate *CHIP* coordinates on reprojected event files.

Workaround:

Since the tool does not explicitly read optical axis information in the header, it assumes that the reprojected `RA_NOM` and `DEC_NOM` are the on-axis position and therefore calculates coordinates from the wrong reference point. In order to instruct it to use the *original* `RA_NOM` and `DEC_NOM`, the `dmcoords` parameters `ra_asp` and `dec_asp` should be set to the `RA_NOM` and `DEC_NOM` values in the original (unprojected) event file.

First, retrieve the original `RA_NOM` and `DEC_NOM` values:

```
unix% set ranom = `dmkeypar evt2.fits ra_nom echo+`  
unix% set decnom = `dmkeypar evt2.fits dec_nom echo+`
```

Use "echo \$ranom" and "echo \$decnom" to view the values, if desired. Then set the "asp" coordinates to these values:

```
unix% pset dmcoords ra_asp=$ranom dec_asp=$decnom
```

After setting the other `dmcoords` parameters, run the tool.

3. *Out-of-range input chip coordinates return erroneous results* (31 Aug 2006)

If you feed `dmcoords` a chip coordinate which is outside the valid range of 0.5:1024.5, it returns incorrect answers. For example:

```
unix% dmcoords acis_evt2.fits chip_id=7 chipx=1.0 chipy=1023.5 opt=chip  
unix% plist dmcoords | grep Sky  
  
x = 4590.29351958163 Sky X [pixel]  
y = 4308.725180313199 Sky Y [pixel]
```

This is correct. Shift the input coordinates by one pixel, however, and the results are no longer accurate:

```
unix% dmcoords acis_evt2.fits chip_id=7 chipx=0.0 chipy=1023.5 opt=chip  
unix% plist dmcoords | grep Sky  
  
x = 5381.730821897476 Sky X [pixel]  
y = 5539.514431368972 Sky Y [pixel]
```

4. *Incorrect aspect solution produces corrupt error message.* (07 Mar 2008) (Linux platforms)

When `dmcoords` is run with a missing or incorrect aspect solution filename, the error message has junk characters in place of the filename.

```
unix% dmcoords infile=acisf01838N002_evt2.fits asolfile=nofile.fits opt=sky x=123 y=123  
# dmcoords (CIAO 3.4): ERROR: Could not open file ^[%G^[%@le.fits.
```

Bugs fixed in CIAO 3.4

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

1. *The interactive "SET" command does not work (Mac OS X)*

Users on this platform will have to use the parameter file to specify the information.

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URL:
<http://cxc.harvard.edu/ciao3.4/bugs/dmcoords.html>
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Bugs: dmcoords – CIAO 3.4