



# **calcos Documentation**

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## PRIMARY USER INTERFACE: CALCOS()

1. To run this task from within Python:

```
>>> import calcos
>>> calcos.calcos("rootname_asn.fits")
>>> calcos.calcos("rootname_rawtag_a.fits")

>>> from stsci.tools import teal
>>> teal.teal("calcos")
```

2. To run this task using the TEAL GUI to set the parameters under PyRAF:

```
>>> import calcos
>>> teal calcos # or 'epar calcos'
```

3. To run this task from the operating system command line:

```
# Calibrate an entire association.
% calcos rootname_asn.fits

# Calibrate xyz_rawtag_a.fits (and xyz_rawtag_b.fits, if present)
% calcos xyz_rawtag_a.fits
```

```
calcos.calcos(asntable, outdir=None, verbosity=None, find_target={'cutoff': None, 'flag':
False}, create_csum_image=False, raw_csum_coords=False, only_csum=False,
binx=None, biny=None, compress_csum=False, compression_parameters='gzip, -
0.01', shift_file=None, save_temp_files=False, stimfile=None, livetimefile=None,
burstfile=None)
```

Calibrate COS data.

This is the main module for calibrating COS data.

### Parameters

#### **asntable: str**

The rootname (with “\_asn”) of an association file, or the rootname (with “\_raw”) of a raw file. If the value of a raw FUV file is specified and files for both segments are present, then both of those files will be calibrated (i.e. without having to explicitly list both files).

### Returns

status: int

0 is OK; 5 means no file was found that could be calibrated.

### Other Parameters

**outdir: str or None, optional**

Name of output directory.

**verbosity: int {0, 1, 2} or None, optional**

If not None, set verbosity to this level.

**find\_target: dictionary, optional**

Keys are “flag” and “cutoff”. flag = True means use the location of the target in the cross-dispersion direction if the standard deviation (pixels) of the location is less than or equal to cutoff (if cutoff is positive). flag = False means use the location determined from the wavecal.

**create\_csum\_image: boolean, optional**

If True, write an image that reflects the counts detected at each pixel (includes deadcorr but not flatcorr), for OPUS to add to the cumulative image.

**raw\_csum\_coords: boolean, optional**

If True, use raw pixel coordinates (rather than thermally and geometrically corrected) to create the csum image.

**only\_csum: boolean, optional**

If True, create a csum image, but most other files will not be written.

**binx, biny: int or None, optional**

Binning factor for the X and Y axes, or None, which means that the default binning (currently 1) should be used.

**compress\_csum: boolean, optional**

If True, compress the “calcos sum” image.

**compression\_parameters: string, optional**

Two values separated by a comma; the first is the compression type (rice, gzip or hcompress), and the second is the quantization level. The default is “gzip,-0.01”.

**shift\_file: str, optional**

If specified, this text file contains values of shift1 (and possibly shift2) to override the values found via wavecal processing.

**save\_temp\_files: boolean, optional**

By default, the \_x1d\_a.fits and \_x1d\_b.fits files (if FUV) will be deleted after concatenating to the \_x1d.fits file. Specify save\_temp\_files=True to keep these files.

**stimfile: str, optional**

If specified, the stim positions will be written to (or appended to) a text file with this name.

**livetimefile: str, optional**

If specified, the livetime factors will be written to (or appended to) a text file with this name.

**burstfile: str, optional**

If specified, burst information will be written to (or appended to) a text file with this name.



**class** `calcos.Association` (*asntable, outdir, cl\_args*)

Read and interpret the association table.

**Parameters**

**asntable: str**

The rootname (with “\_asn”) of an association file, or the rootname (with “\_raw”) of a raw file (or pair of files if FUV).

**outdir: str or None**

Name of output directory.

**cl\_args: dictionary**

Some of the command-line arguments, or their defaults.

Constructor.

**class** `calcos.Observation` (*input, outdir, memtype, suffix, shift\_file, first*)

Get information about an observation from its headers.

This base class is not directly used; one of its subclasses will be invoked, depending on DETECTOR and OBSMODE.

**Parameters**

**input: str**

The name of an input raw file.

**outdir: str**

An empty string or the name of the output directory.

**memtype: str**

Read from the association table; used to distinguish between wavecal and science observation.

**suffix: str**

Suffix to the rootname, but just “\_rawtag” or “\_rawaccum” (i.e. excluding “\_a” or “\_b” if the data were taken with the FUV detector); this may be reset internally to “\_corrtag” or “\_rawimage” or “\_rawacq”.

**shift\_file: str or None**

The name of the shift file (command-line argument), if one was specified.

**first: boolean**

True if the current file is the first of two for FUV.

Invoked by a subclass.



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