



Wide Field Camera 3 (WFC3) Python Data Analysis Tools and Jupyter Notebooks

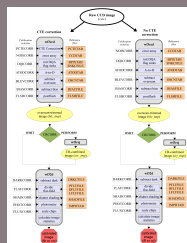
The wfc3tools Python package, maintained at STScI by the WFC3 instrument team, is home to a number of software tools optimized for WFC3 data analysis and calibration. This package includes tools for custom calibration with the calwf3 data reduction pipeline, inspecting and displaying data, and diagnosing and correcting anomalies in data, among others. New functionality has recently been added to this package to facilitate WFC3 data analysis. As a complement to this Python package, the WFC3 team has also developed a series of Jupyter notebooks outlining detailed workflows for various data analysis techniques including step-by-step procedures for special observing modes, and for diagnosing and correcting anomalies in IR data.

wfc3tools Python package

What's there?

Calibration pipeline

wfc3tools provides a Python interface to the calwf3 calibration pipeline. Additionally, all the pipeline subtasks (i.e. wf3cte) can be run individually for custom processing.



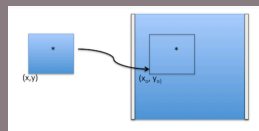
Subarray tools

sub2full

Translate position in IR or UVIS subarray to position in full frame.

embedsub

Returns a full-frame image with a subarray embedded at the correct position.



WFC3 IR tools

pstat

Plot a chosen statistic of each read of an IR ramp (full image or section)

pstack

Plot a chosen statistic of each read of an IR ramp (full image or sec)

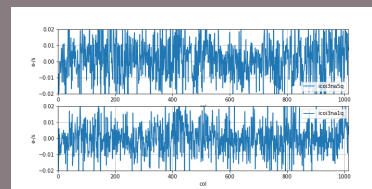
sampinfo

Print useful info about each read in an IR ramp.

What's new?

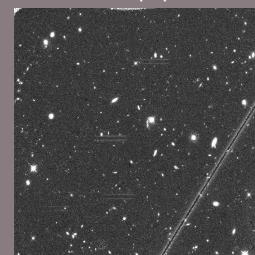
Grism background subtraction

Code that will estimate and/or subtract the level of zodiacal light, HeI emission, and scattered light in IR grism data. Also helps recalibrate data impacted by time-variable background, where the calwf3 pipeline fails.



Satellite trail masking

Recover data impacted by a satellite trail. Masks the trail in the DQ array and reprocesses with the calwf3 pipeline.



IR ramp flattening

Tool to re-calibrate IR observations that suffer from background levels that vary over the duration of the exposure, where the up-the-ramp fitting normally fails.

Jupyter Notebooks

github.com/spacetelescope/notebooks

WFC3 Data Analysis Notebooks

- Tutorial-style demos of workflows, with live coding demos including data download, and descriptive narrative text.
- Notebook demonstrating use of wfc3tools module grism_back_sub to fit and subtract a 3-component background model from WFC3 IR grism data
- Notebook showing techniques for analyzing WFC3 spatial scan data

DrizzlePac Notebooks

- 11 notebooks demonstrating workflows for aligning images, and various techniques for image combination/mosaicking using AstroDrizzle.
- **A new notebook demonstrating how to select and apply updated WCS solutions, which were implemented in the MAST pipeline in December 2019, is now available.**

Some of the software mentioned will be released in early February. For early access to the current development version, please email cshananan@stsci.edu or contact the WFC3 help desk.