

INPUT MODULE

(ID), RA, DEC from command line
OR
(ID), RA, DEC from input file

If ID is missing, it's assigned to "Target_nn", where "nn" is the row number zero-padded to total number of rows. Output is a list of named tuples containing (ID, RA, DEC).

FIND MODULE

List of named tuples

Reports the total amount of exposure time for each target. Optional to exclude any targets with less than "t" total time (default t=1. to ignore targets with no exposure time, set t=0. to include them). Option to specify date ranges (accept GALEX time, JD, calendar formats, determine date type automatically). Output is a class object containing the (ID,RA,DEC) named tuple, and the time ranges. This class object will also hold items like name of diagnostic plots, the lightcurve values, etc. Class is called gpTarget. Includes functions to read and write the gpTarget to an output file to save/restore state of a given target.

IMAGES MODULE
One gpTarget object

Generates stacked images (coadd using all available time), album images (time-series of images using an integration time “t1”), and movie (using some interval “t2”) for each available band, of the requested size “a”. Coadd image is best used for defining the photometric aperture and see what sources exist in the field. Album view is good for looking at moderate-temporal resolution variability. Movie is good for looking at high-temporal variability. Updates gpTarget object.

LIGHTCURVES MODULE
One gpTarget object

Uses the “–suggest” algorithm to determine initial apertures. Display that aperture on the coadded (stacked) image. Allow the user to adjust the aperture. Send relevant information to gAperture and generate a lightcurve at the specified time sampling “t”. Updates gpTarget object.

DIAGNOSTICS MODULE
One gpTarget object

Products numerous diagnostic plots, including: Position vs. Time, Raw/Effective Exposure Time (should be between 0.6 and 0.95), flux vs. detector position (3-panel plot with X, Y, and R=distance from center of tile), background corrections vs. time, real vs. predicted errors (scatter larger than typical error, for example), number of photon events per time bin, etc. Updates gpTarget object.