

Semi-automated RSS MOS mask design



Semi-automated RSS mask design

- See <https://github.com/mattyowl/rss-mask-design> for a package that produces slit mask files using public photometric surveys (e.g. DECaLS) and colour, mag cuts

The screenshot shows the GitHub repository page for 'mattyowl/rss-mask-design'. The repository is public and has 0 stars, 0 forks, and 1 watching. The main content area displays a list of files and folders, including 'configs', 'rss-proptools', 'LICENSE', 'README.rst', 'makeConfigsFromPIPTTargets.py', 'makeSALTslitMaskFiles.py', and 'pipt-format-targets.csv'. The 'README.rst' file is selected, showing its content. The README text describes the repository's purpose: generating files for SALT RSS slit masks using data from large photometric surveys. It mentions the use of the 'zCluster' package and provides a command to install it: `pip install zCluster --user`. It also notes that other modules like 'ephem', 'apipy', and 'astroquery' may be needed.

Repository Information:

- Repository: `mattyowl/rss-mask-design` (Public)
- Actions: Pin, Unwatch (1), Fork (0), Star (0)
- Navigation: <> Code, Issues, Pull requests, Actions, Projects, Wiki, Security, Insights, Settings
- Branches: main (selected), 1 branch, 0 tags
- Buttons: Go to file, Add file, Code

File List:

File/Folder	Description	Time
configs	Added code (from proptools) to generate RSMT files	7 months ago
rss-proptools	Added code (from proptools) to generate RSMT files	7 months ago
LICENSE	Added code (from proptools) to generate RSMT files	7 months ago
README.rst	README update	23 minutes ago
makeConfigsFromPIPTTargets.py	Added code (from proptools) to generate RSMT files	7 months ago
makeSALTslitMaskFiles.py	Cranked up number of Gaia rows	4 months ago
pipt-format-targets.csv	Added script to generate configs for SMERGHERS	7 months ago

README.rst Content:

This repository contains a script for generating the files needed to make SALT RSS slit masks using data from large photometric surveys.

The code makes use of the `zCluster` package. You should be able to install this with:

```
pip install zCluster --user
```

In addition, you will also need to install the `ephem`, `apipy`, and `astroquery` modules (and perhaps some others).

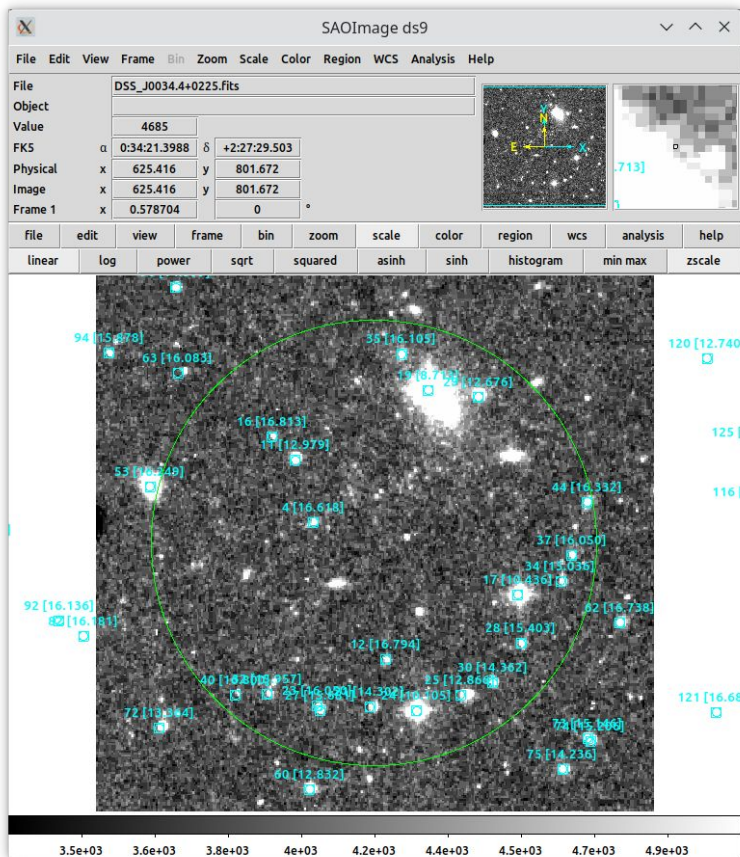
Repository Statistics:

- About: Script and procedure for designing SALT RSS slit masks using data from public surveys
- Readme
- License: BSD-3-Clause license
- Stars: 0
- Watching: 1
- Forks: 0
- Releases: No releases published. [Create a new release](#)
- Packages: No packages published. [Publish your first package](#)
- Languages: Python 100.0%

Workflow

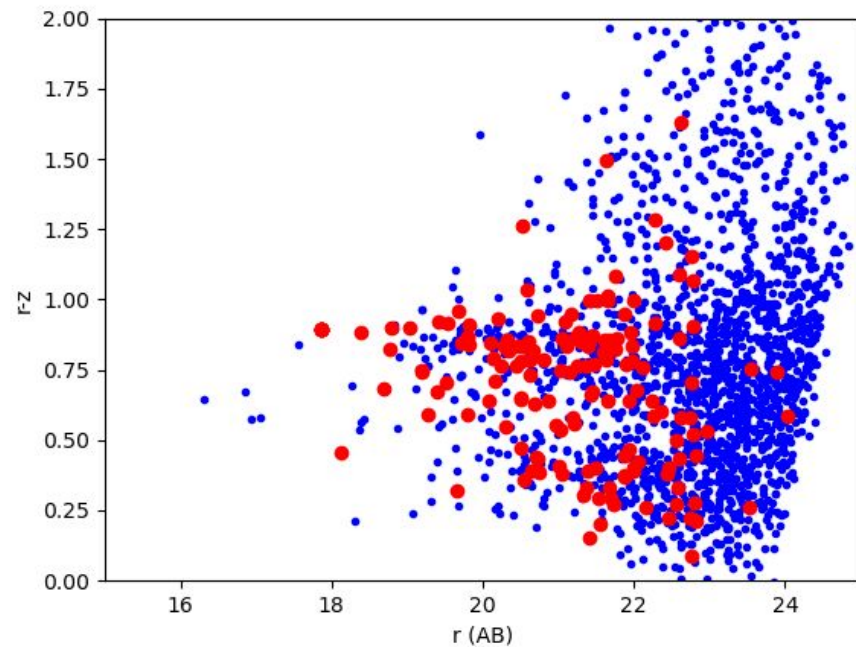
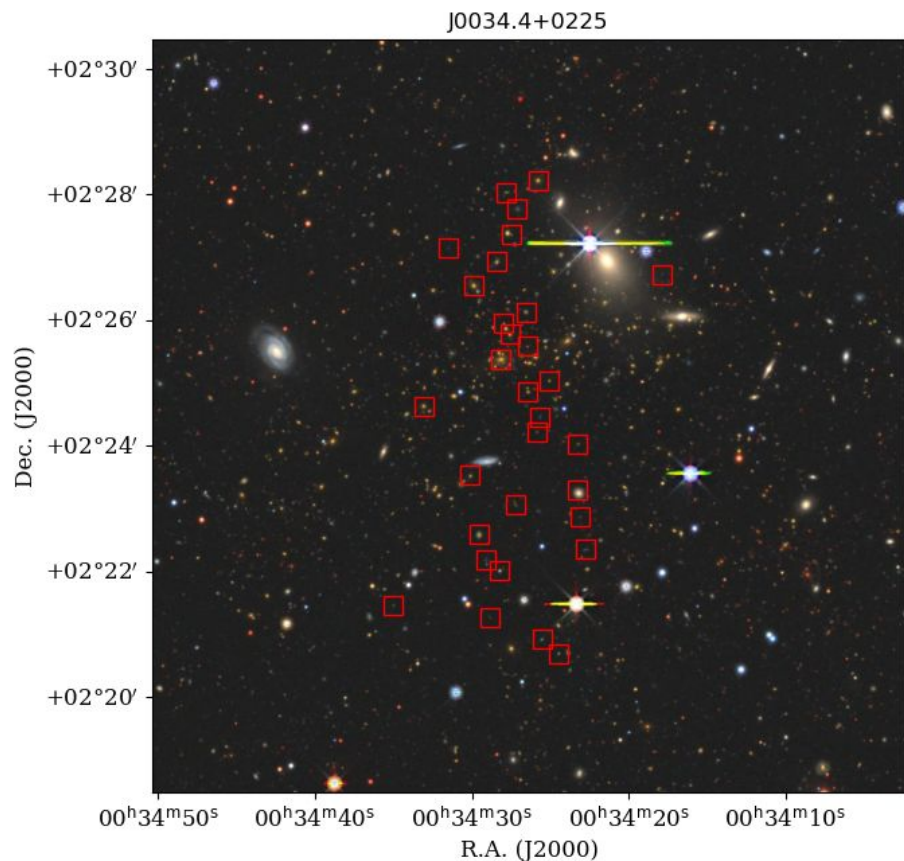
- The `README.rst` file in the repository explains the workflow
- Briefly:
 - create an initial config file that defines things like the mask centre coords, initial colour-mag cuts etc. (use helper script for doing this for many targets)
 - run the script to fetch catalogs and images:
 - e.g. `python3 makeSALTSlitMaskFiles.py configs/J0034.yml`
 - inspect the DSS image to choose 4 alignment stars [taken from GAIA], and add their IDs to the config file
 - e.g. `ds9 MaskFiles_J0034.4+0225/DSS_J0034.4+0225.fits -regions MaskFiles_J0034.4+0225/brightStars.reg`
 - run the script again, then inspect the output and adjust the config until you are happy:
 - colour-mag diagram
 - colour images of each mask with selected objects highlighted
 - upload the output `.rsmt` mask file to PIPT

Selecting alignment stars



```
1 Parameters file for use with makeSALTslitMaskFiles.py
2
3 # Cluster/field name/centre coords
4 # Output from the script will be written to MaskFiles_<name>/
5 name: 'J0034.4+0225'
6 RAdeg: 8.610
7 decDeg: 2.408
8
9 # Mask meta data, needed for final output
10 proposer: 'Matt Hilton'
11 proposalCode: '2022-1-MLT-005'
12
13 # The format of the galaxy catalog file - either "FetchDR8", "FelipeS82", "FelipeDR8", "MattFITS", or "zCluster"
14 catalogFormat: "zCluster"
15
16 # Path to the galaxy catalog file - OR the database, if catalogFormat is 'zCluster'
17 galaxyCatalogFile: "DECaSDR9"
18
19 # Below specify arbitrary cuts on catalog for top priority targets to put slits on
20 targetCuts:
21 - 'r > 17'
22 - 'r < 22'
23 - 'r-z < 1'
24
25 # Cuts below are used to specify secondary targets, these are used when no more of
26 # the galaxies that pass targetCuts can be placed in a mask
27 fillerCuts:
28 - 'r > 17'
29 - 'r < 23'
30
31 # Slit dimensions
32 slitLengthArcsec: 9.0
33 slitWidthArcsec: 1.5
34
35 # Minimum gap to leave between slits
36 safetyArcsec: 1.0
37
38 # List of object IDs in the galaxy catalog to include in every mask (e.g., the BCG)
39 alwaysIncludeIDs: [5059]
40
41 # Slit length for the above - if this was a BCG, might want a longer slit, for example
42 alwaysSlitLengthArcsec: 10.0
43
44 # Reference stars, for slit mask alignment - these should be selected from brightStars.reg
45 # To make brightStars.reg without making slit mask files, run the script with refStarIDs=[]
46 refStarIDs:
47 - 16
48 - 34
49 - 32
50 - 28
51
52 # Fluffy stuff
53 CMDCol: "r-z"
54
55 # Number of masks to make - objects will not overlap between masks unless they are in alwaysIncludeIDs
56 numMasks: 6
```

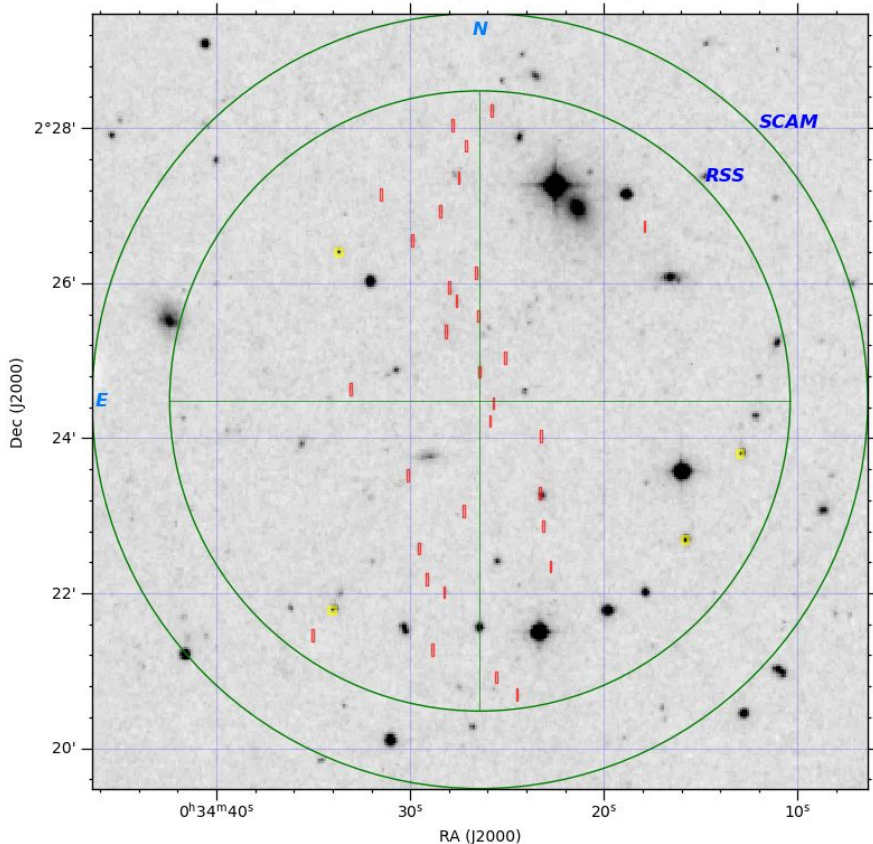
Examples of output



CMD shows selected objects in 6 x masks

Examples of output

Mask #J0034.4+0225M1 (2022-1-MLT-005; Matt Hilton)



Some notes:

- *.rsmt slit mask files are written into the `RSMTFiles/` directory - this makes use of code from `pySlitMask.py`
- Gaia is being used for the alignment stars in this version - this should work for DECaLS since they are on the same astrometric system but may not for other catalogs
- The code only uses the following position angles (PA):
 - PA = 180 deg for dec > -35 degrees
 - PA = 0 deg for dec < -35 degrees