

Advanced AstroSat Workshop 2023



UV CATALOG OF GOODS-South



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15th January 2023

OUTLINES

1. INTRODUCTION

2. TOOLS AND TECHNICQUE

- I. Background estimation
- II. Source extraction
- III. Photometry
- IV. Error calculation
- V. Aperture correction
- VI. PSF Modelling

3. ANALYSIS

4. INITIAL RESULTS

INTRODUCTION

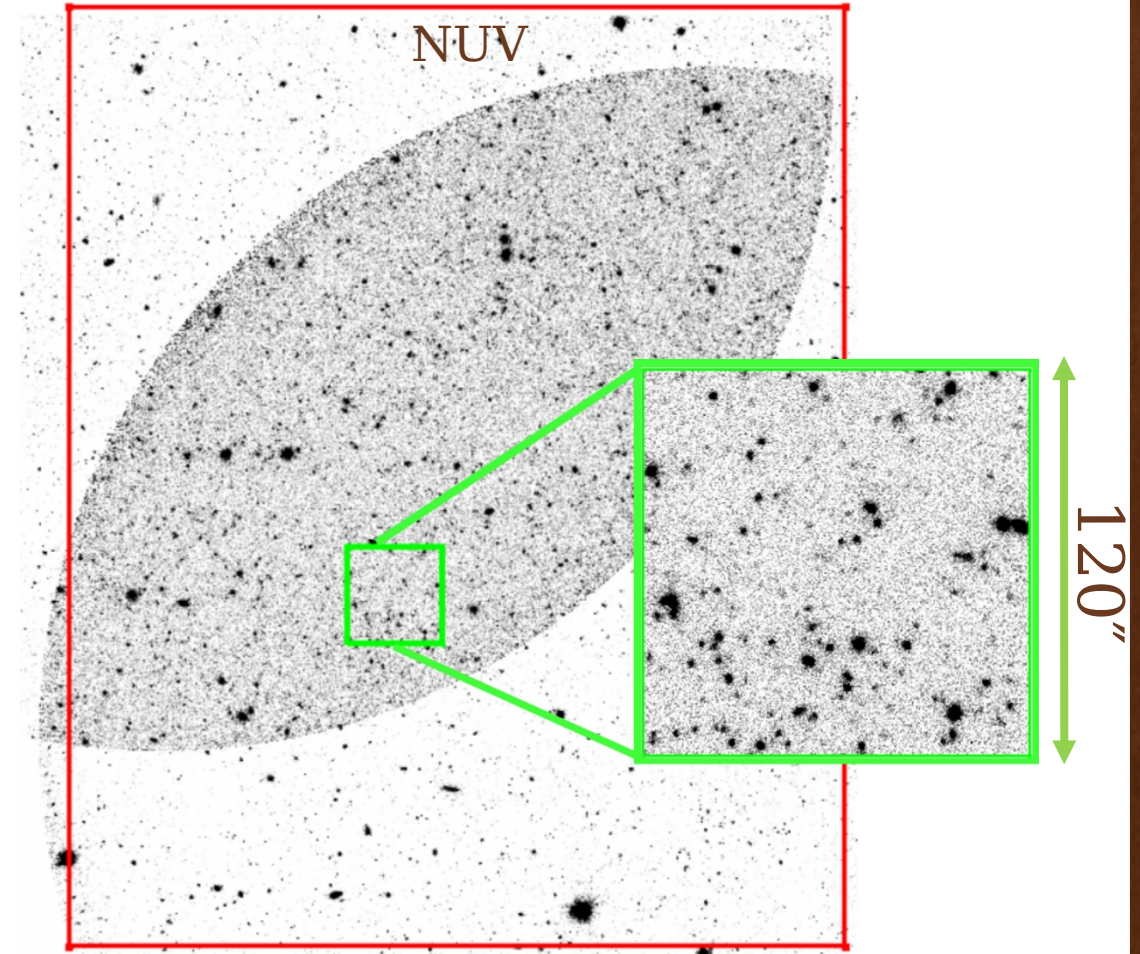
Data: FUV & NUV using
UVIT/AstroSat

Filters: N242W (NUV) & F154W
(FUV)

Exps time: 63 kilo sec

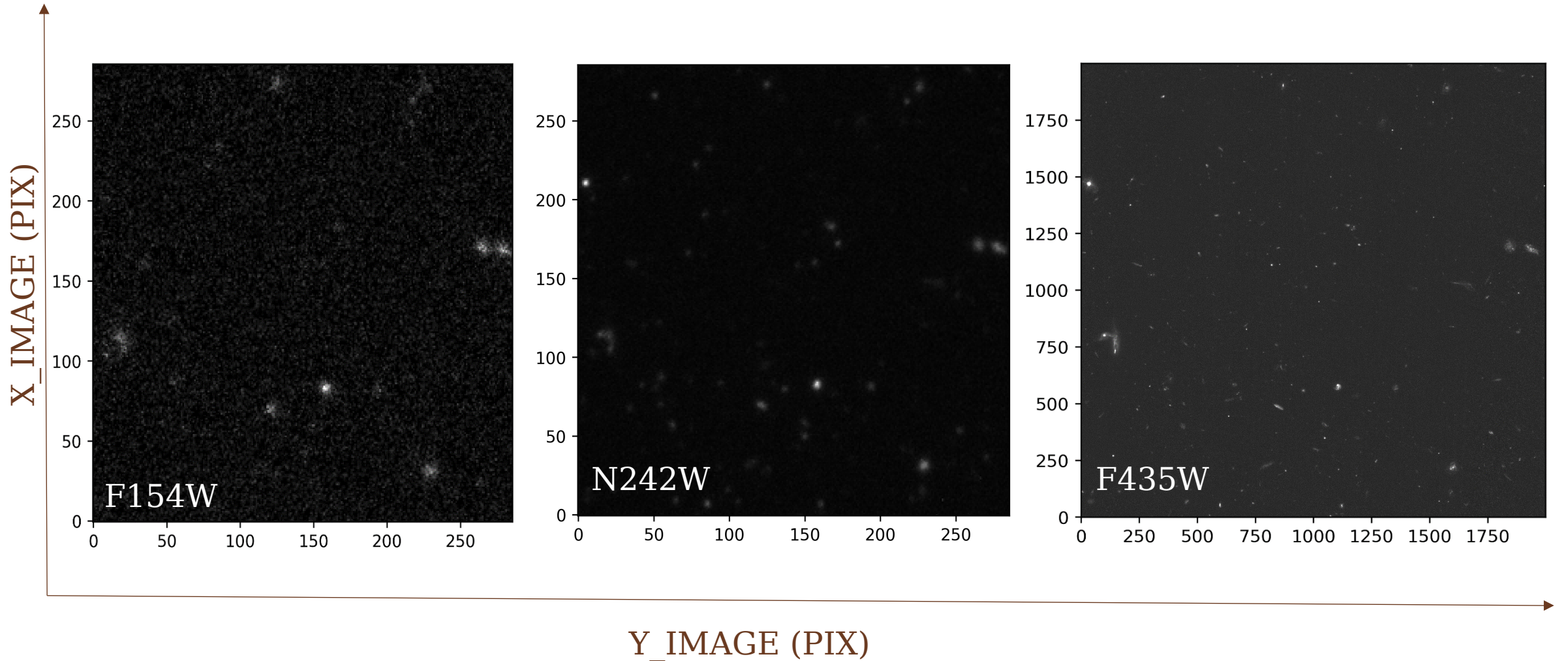
Region: 120" * 120"

*The image shows the NUV observation
with the concerned patch (shown in a
green box) and the red box highlights the
general GOODS-South region covered by
the archival HST observations.*



Credit: Kanak Saha

DATA



BACKGROUND SUBTRACTION

1.DS9

Region
without
sources



Find CPS of
background



Take mean
cps of
background

2.IRAF

3.Using
Segmentatio
n map

BACKGROUND SUBTRACTION

DS9

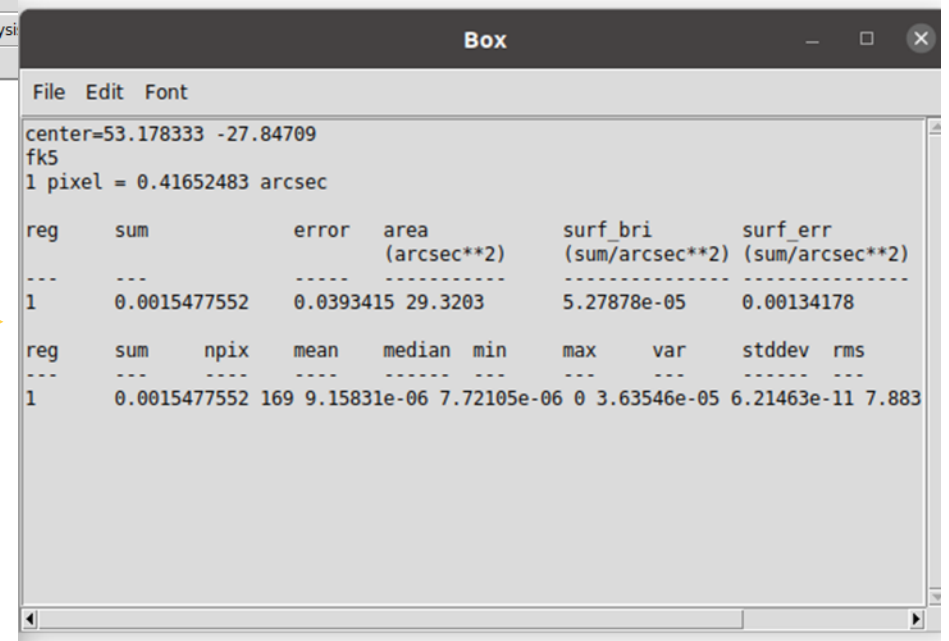
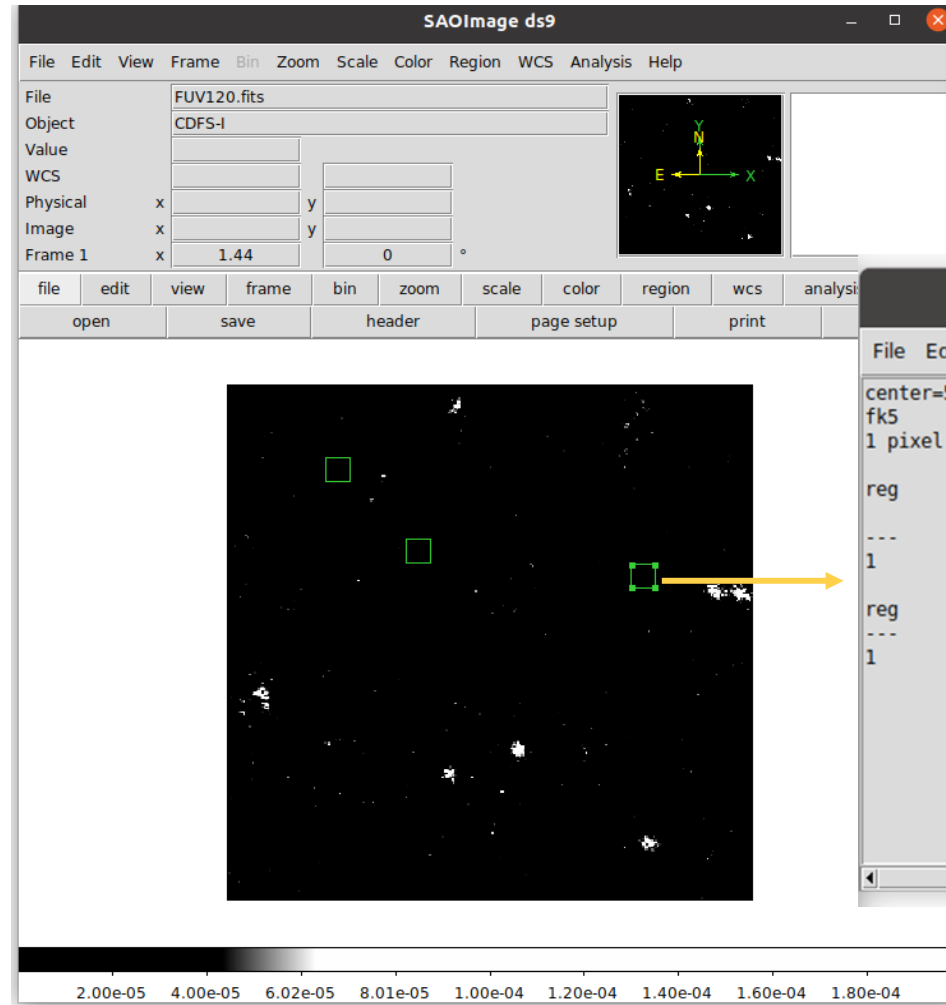
Region without sources



Find CPS of background



Take mean cps of background



BACKGROUND SUBTRACTION

IRAF

Region
without
sources



Find CPS of
background



Take mean
cps of
background

```
srd@srd-VirtualBox: ~/Desktop/Final_UVIT_AstroSat_Project
This product includes results achieved by the IRAF64 project in 2006-2009
directed by Chisato Yamauchi (C-SODA/ISAS/JAXA).

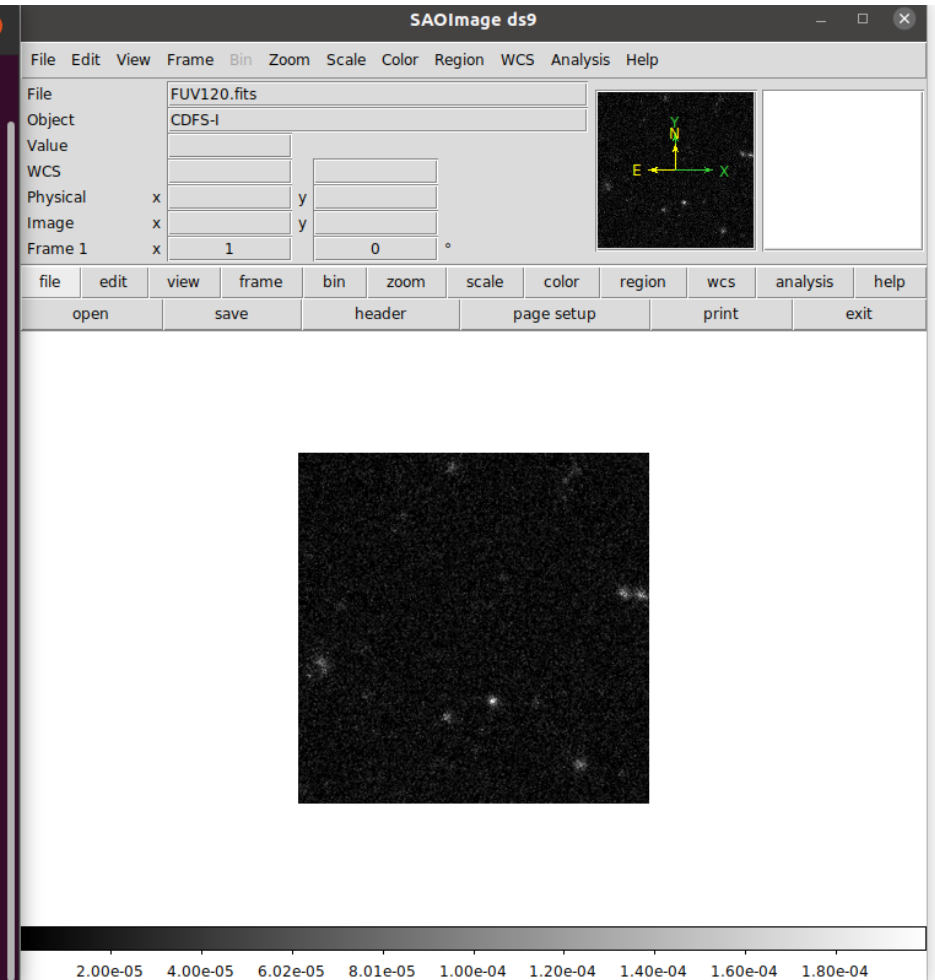
Welcome to IRAF. To list the available commands, type ? or ??. To get
detailed information about a command, type 'help <command>'. To run a
command or load a package, type its name. Type 'bye' to exit a
package, or 'logout' to get out of the CL.

Visit http://github.com/iraf-community/iraf/issues to report problems.

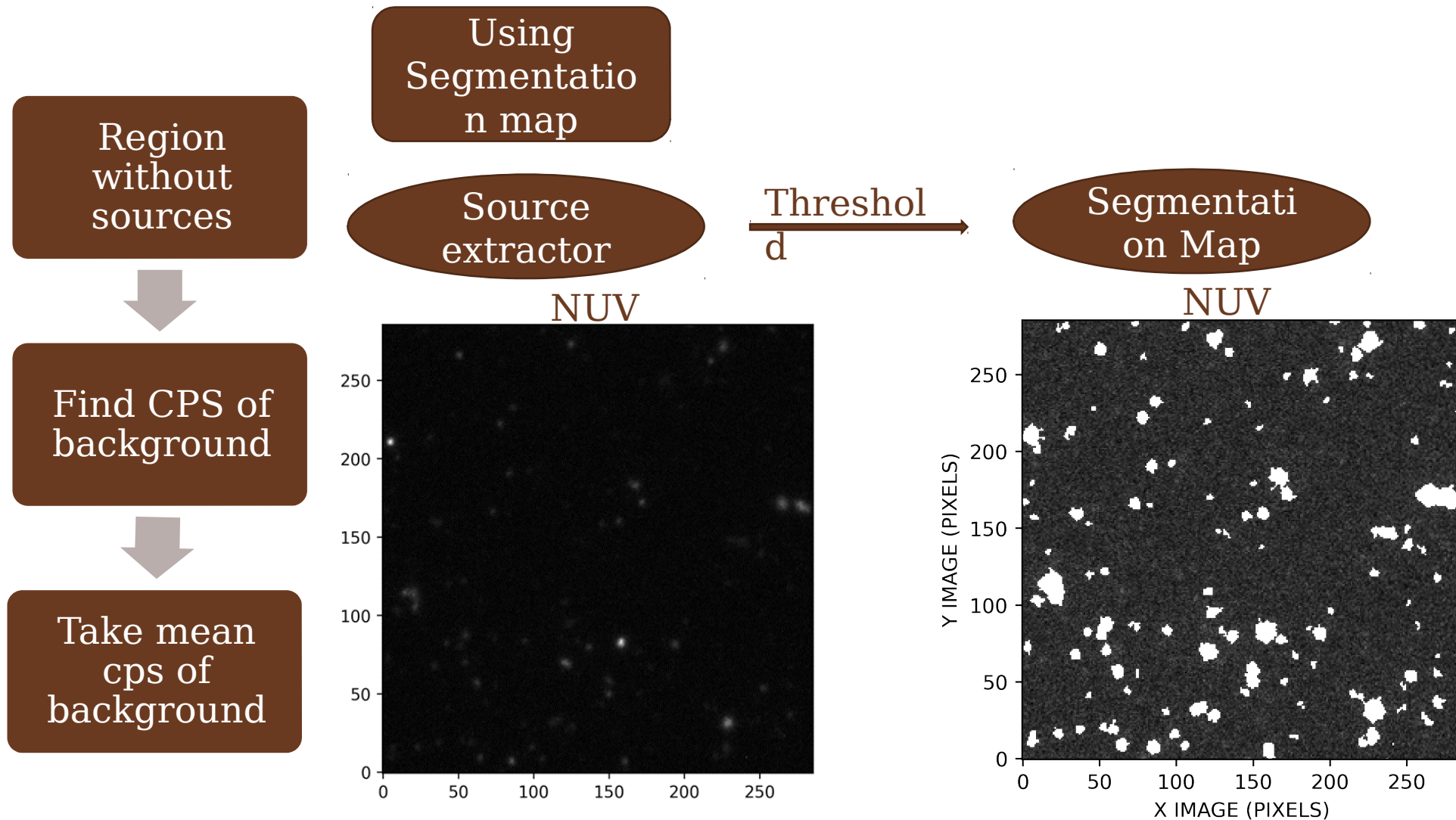
*** Using global login file: /home/srd/.iraf/login.cl
The following commands or packages are currently defined:

clpackage/
clpackage/  images/      noao/      proto/      user/
dataio/     language/  obsolete/  softtools/  utilities/
dbms/       lists/     plot/      system/

PyRAF 2.1.15 Copyright (c) 2002 AURA
Python 3.8.10 Copyright (c) 2001-2021 Python Software Foundation.
Python/CL command line wrapper
.help describes executive commands
--> noao
--> dig
digiphot/:
apphot/      daophot/    photcal/    ptools/
--> dao
daophot/:
addstar      daotest     nstar       pexamine    psf
allstar      datapars@  pcalc       pfmerge     psort
centerpars@  findpars@  pconcat     phot        pstselect
daoedit      fitskypars@ pconvert    photpars@  seepsf
daofind      group      pdump       prenumber   setimpars
daopars@     grpselect  peak        pselect     substar
--> !ds9&
--> !mexam
#          SECTION      NPIX      MEAN      MEDIAN    STDDEV      MIN      MAX
[49:55,252:258]  49  9.251E-6  8.414E-6  7.835E-6      0.  3.947E-5
[74:80,152:158]  49  9.281E-6  6.658E-6  6.948E-6  1.294E-6  2.838E-5
[37:43,19:25]    49  8.678E-6  6.388E-6  7.733E-6      0.  3.597E-5
[255:261,92:98]  49  8.948E-6  7.341E-6  7.772E-6      0.  2.956E-5
[29:35,245:251]  49  9.913E-6  9.010E-6  7.468E-6      0.  3.554E-5
```

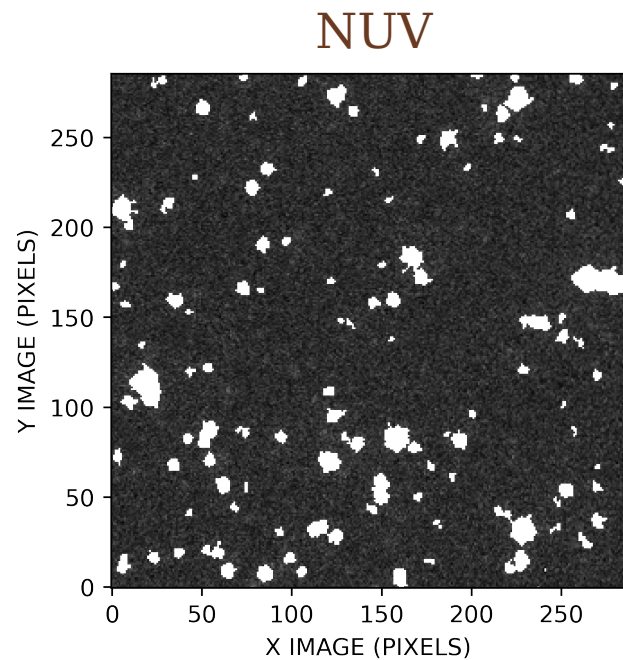


BACKGROUND SUBTRACTION

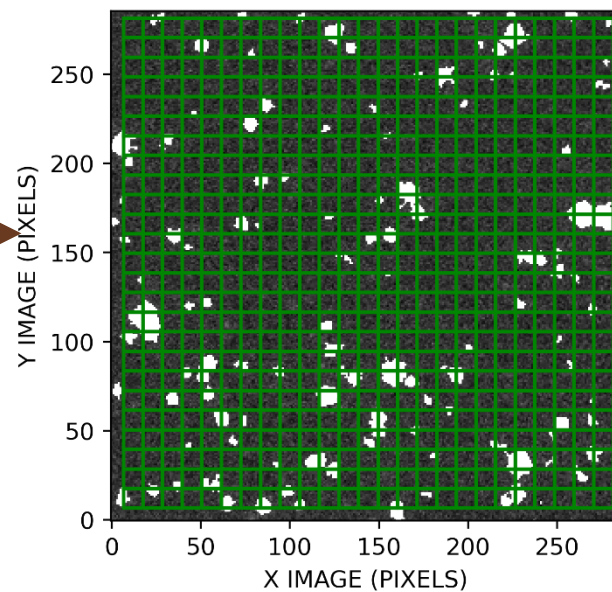


BACKGROUND SUBTRACTION

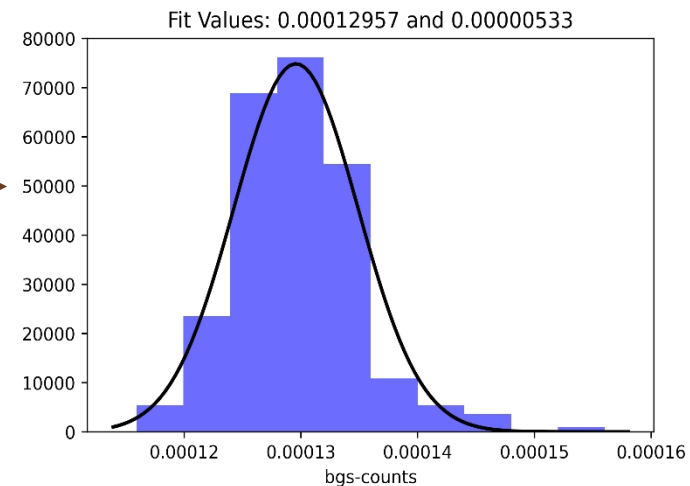
Using Segmentation map



NUV



Eliminate
boxes with
source or
sources.



*Similar Steps are followed for
FUV*

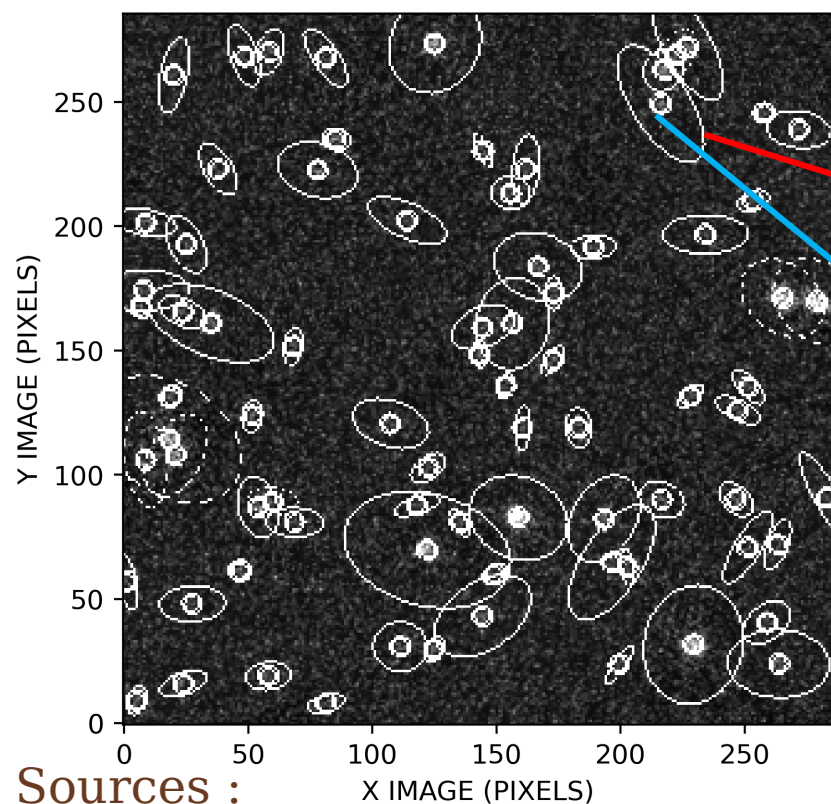
SOURCE EXTRACTION & PHOTOMETRY

SExtract

No	Threshold parameters	NUV	FUV	HST
1	Minimum Area	8	8	3
2	Seeing FWHM	1.2	1.5	0.1
3	Pixscale	0.41	0.41	0.06
4	Zeropoint	19.763	17.771	25.6
5	Aperture Diameter	8	8	54

SOURCE EXTRACTION & PHOTOMETRY

FUV



Sources :

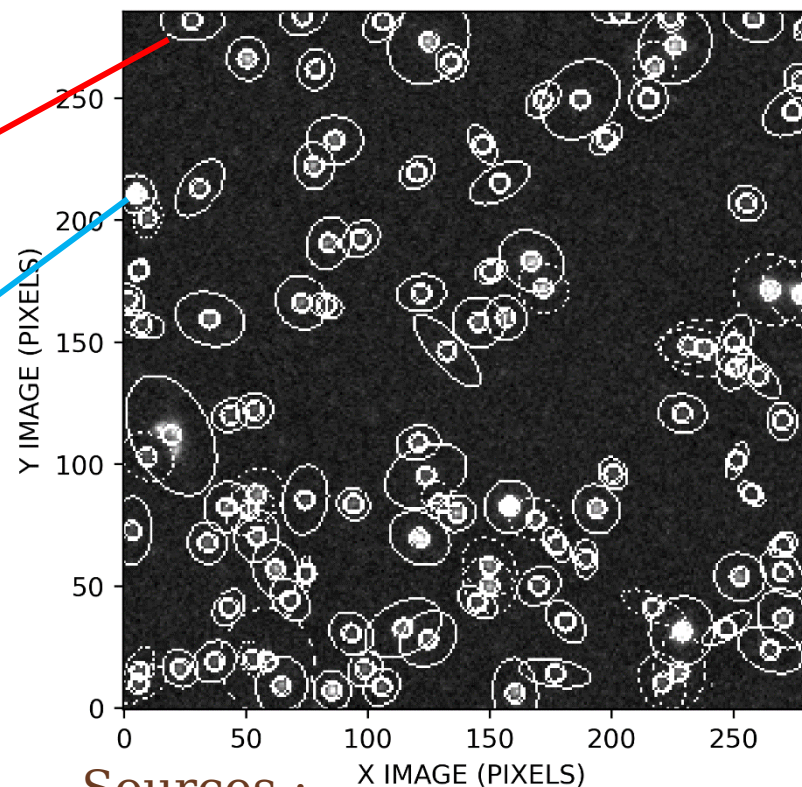
79

SExtract

Petrosian
Area

Aperture
Area

NUV

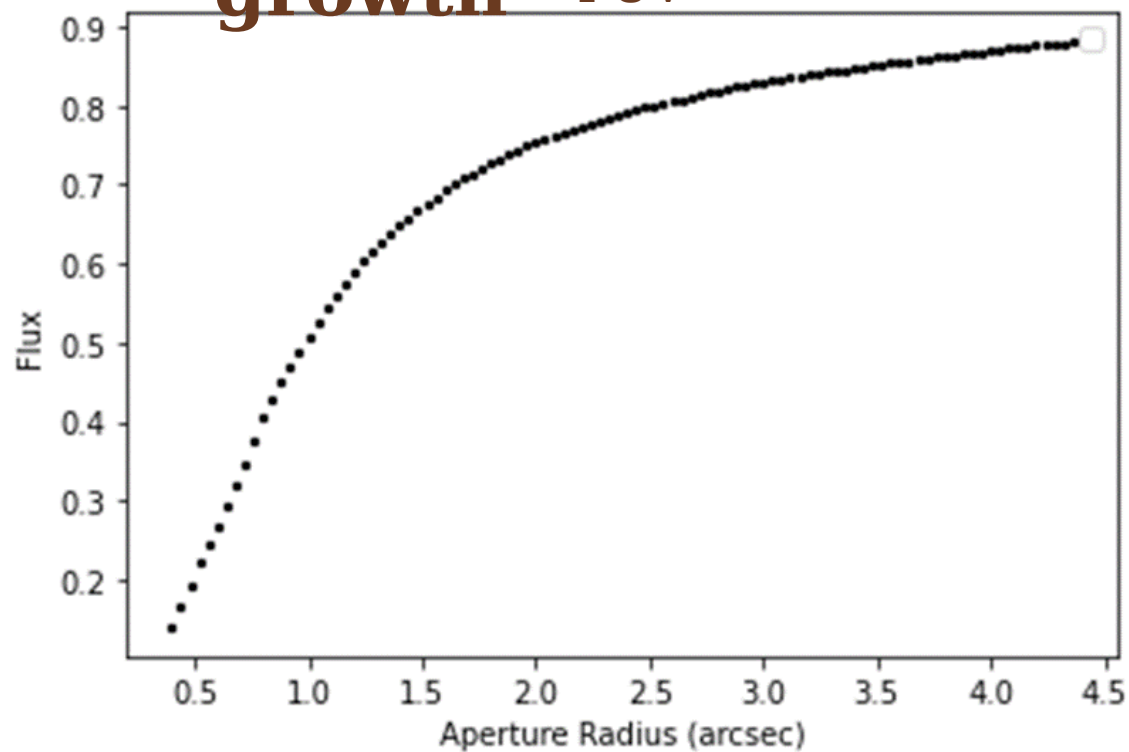


Sources :

112

APERTURE CORRECTION

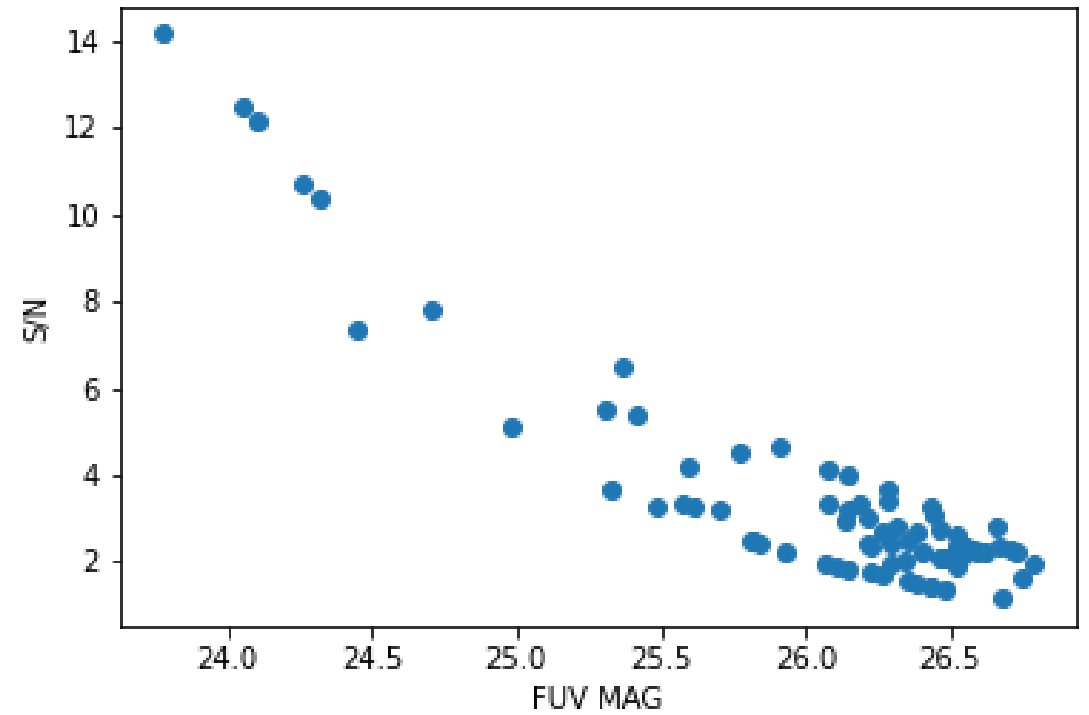
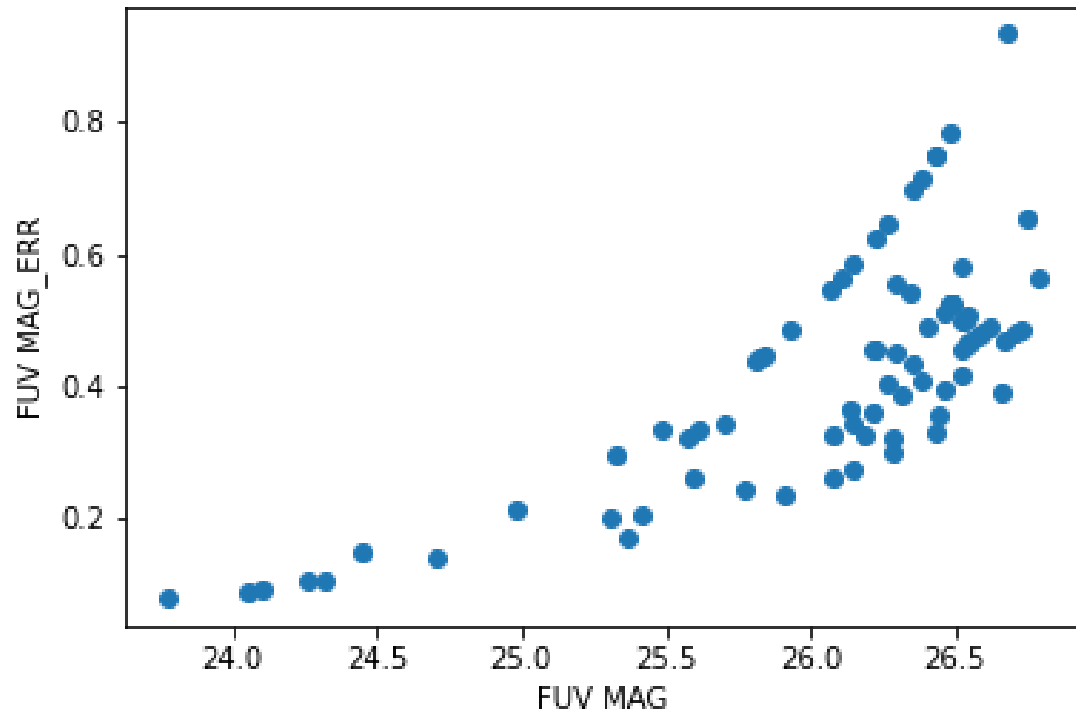
Curve-of- growth FUV



Aperture Correction = 0.169
mag

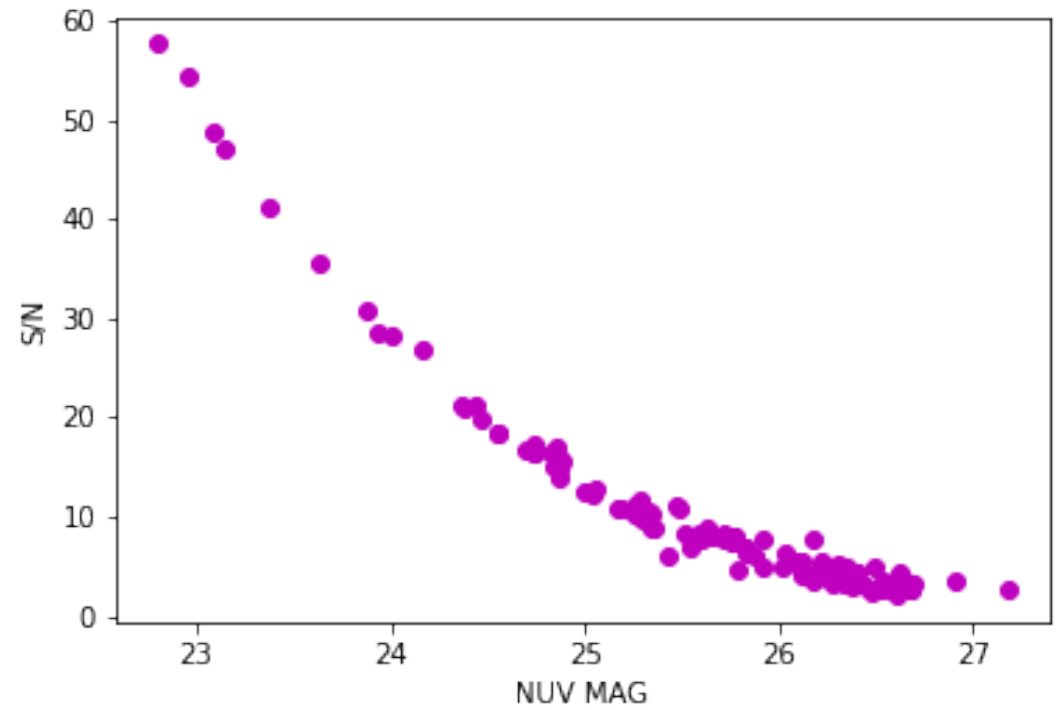
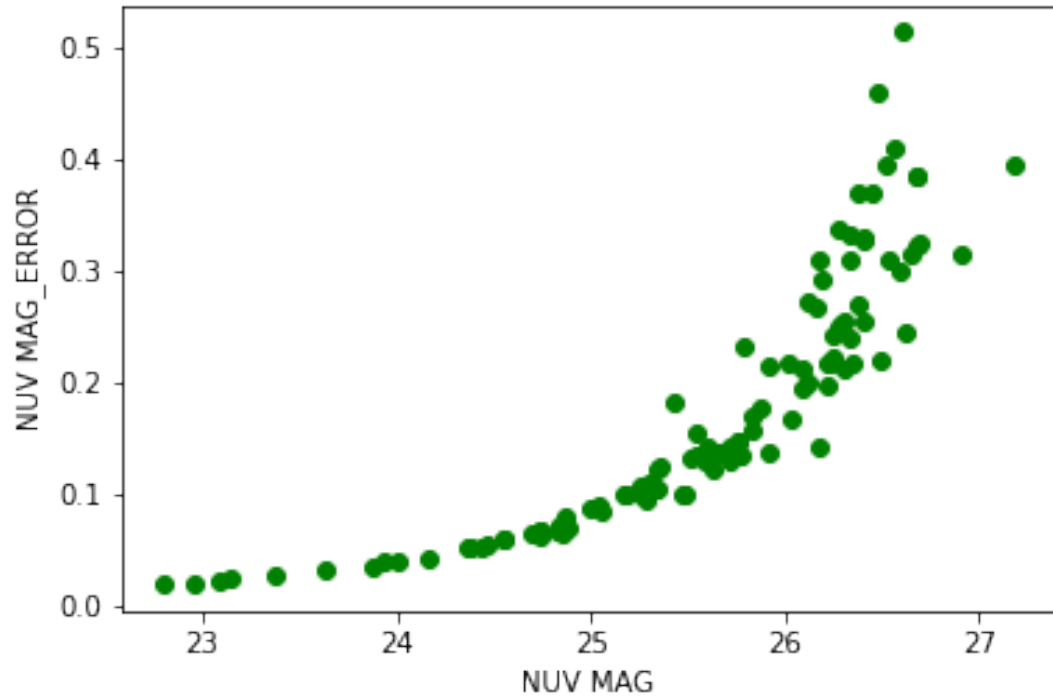
ERROR & S/N CALCULATION

FU
V

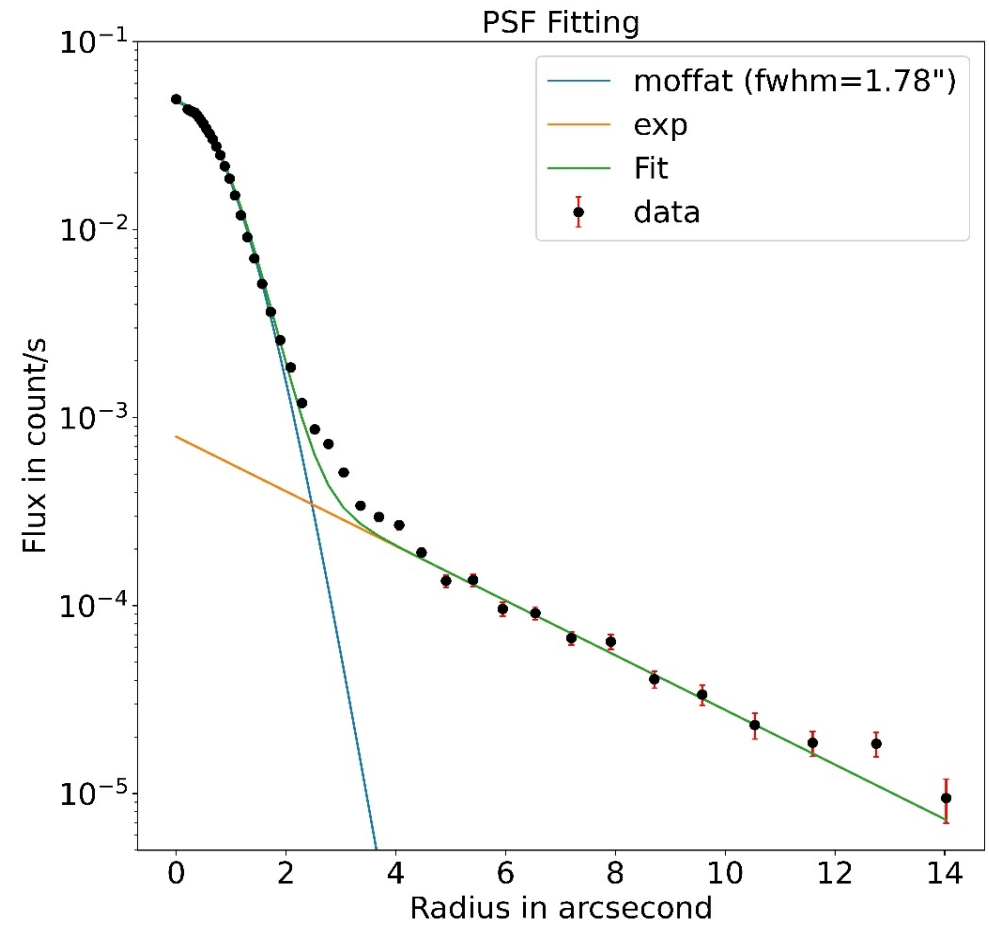
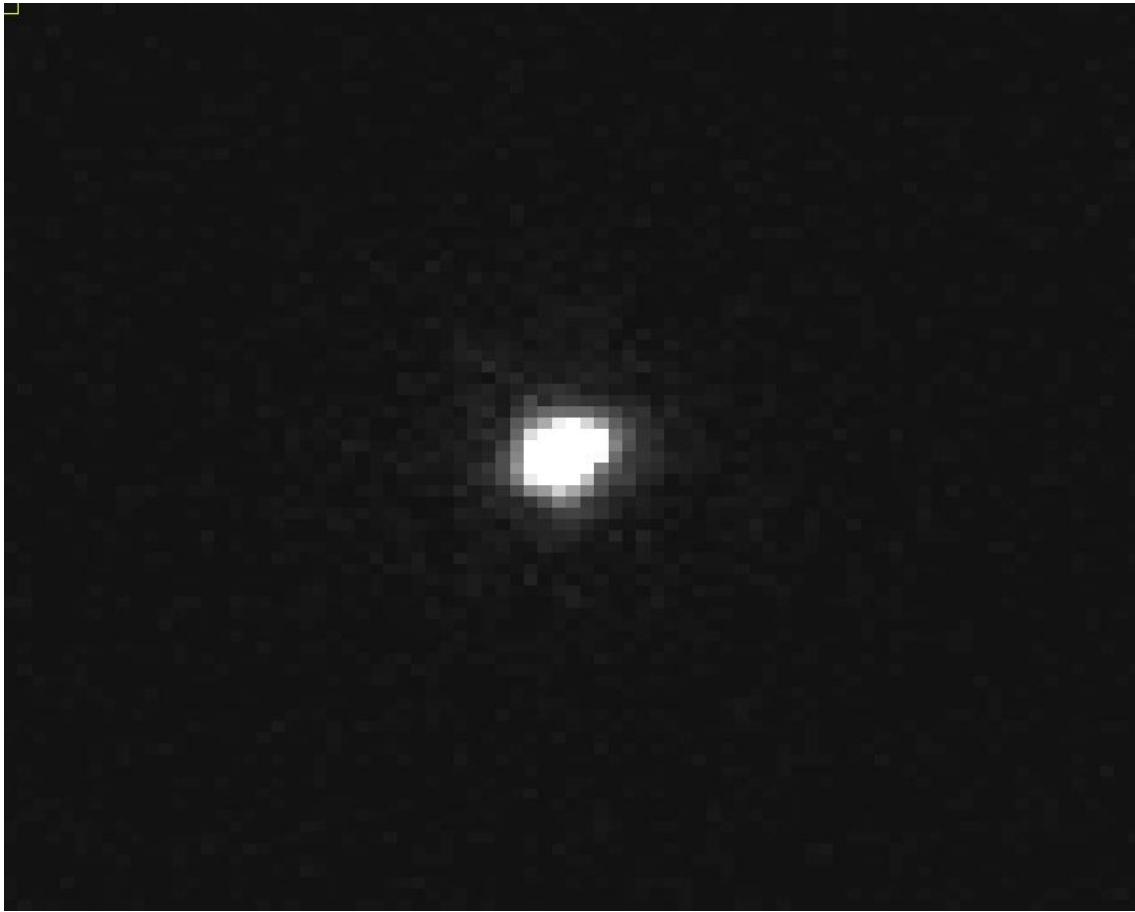


ERROR & S/N CALCULATION

NUV



PSF Modelling



THANK YOU