

Wyffos Quick-Look reductions

1 Introduction

For now this package is only available as a TAR file which should contains several files (one IRAF Command Language, bash Shell and text).

The files should be placed in sub-directory like for example *AF2_QUICKLOOK*.

- *wyffosREDUC.cl*
You need to change one line: the homeDIR variable which depend of the user
- *wyffosCONF.sh*, *wyffosFIBcentr.sh* and *wyffosCOMMENT1.sh* shell scripts
- *XXXX.dat* identification line files (like ideheliumXXXX.dat, neonXXXX.dat, neonECHELLE_8800.dat, etc ...)
- *arcXXXXXX.jpg* example of identification files for the Neon and Helium AF2 lamps.
- *wyffosQuickLook.pdf* this help file in PDF format.

2 Installing Wyffos Quick-Look Pipeline:

To make it working as an IRAF task you must:

2.1 Include the following lines in the *login.cl* file

- print "Loading QuickLook package ..." (optional)
- set homeQUICK = "home\$AF2_QUICKLOOK/"
- task wyffosREDUC = homeQUICK\$wyffosREDUC.cl

2.2 IRAF packages

It is also necessary to include the following lines to load the required packages:

- **noao**, **imred**, **ccdred** and **specred**

Here home\$ represents your iraf home directory (for example */home/username/iraf/*) and *AF2_QUICKLOOK* is the subdirectory where you will place the necessary line lists, the shell scripts and the *wyffosREDUC.cl* package.

3 Execution - Reduction

3.1 Run IRAF:

- run IRAF with **ncl** or **cl** in a Xgterm window
- change directory to the working directory

3.2 Data preparation:

The **.cfg**, **.list** and **.dat** files should be placed in the directory with the data (**.fit**) you want to reduce.

- the same Configuration file (**.cfg**) used for the fiber setting
- create a list (**.list**) of all the frames you want to use, with the **imhead *fit[1] > fileNAME** command. Just edit the list (full frames already present) and remove the files you want not use for this setup. This creates a file listing which is cleaned later within the *wyffosREDUC.cl* task.
- the calibration (**.dat**) files have the format: **Wavelength [NAME] [intensity] [Comments]**
- The pipeline searches for those objects with **IMAGETYP** sky, object, arc, flat, etc. If the command sky, for example, has not been used to take the sky exposures then these should be manually replaced with **HEDIT**. This can also be used to fix the image types of other files:
→ eg. **hedit r601532.fit[1] IMAGETYP "sky" up+ ver+ s+ names.**

3.3 Starting the reduction:

Run the task with **epar wyffosREDUC** to edit and change the parameters

After each successful operation you can change the status keyword (NO → YES) each time one operation has been successfully done.

4 Steps of the wyffosREDUC task

- *Step 1:* Files checks
- *Step 2:* Combine all the BIAS, ARCS, FFs, OBJECTs and SKYs frames
- *Step 3:* Dofiber (find the trace of fibers and extract them)
- *Step 4:* Extract the **.CFG** information
- *Step 5:* Scopy each fiber into a FITS file
- *Step 6:* Identify the line (type **b** and get the automatic identification)
- *Step 7:* ReIdentify (automatically) the N-1 other fibers
- *Step 8:* Find the sky ... should combine them in the FUTURE
- *Step 9:* Plot the sky substracted objects

5 Hints and problems

5.1 Important steps of the reduction

- To insure that the cosmics are properly removed in the combine task you should have at least 3 frames for each set (bias, arc , flat, sky, object).
- Make sure that no fiber(s) from the **.cfg** file is missing in the gap or only partially present. If this is the case, you may have to edit the **.cfg** file and change the fiber to PARK status. This will avoid any shift in the fibers numbering.
- You may want to manually run the DOFIBER task (default mode yet) and see the fiber fitting process. Just answer (no or NO) to skip and run the task without interaction. For the central fibers maybe fitting with a greater order (than 3) would be better.

- The (automatic) identification task (for the N-1 fibers) is the step where most problems can occur (not working at 100%).
 - You must perform the best identification possible (step 6). Try to have more than 15-20 lines. (To increase the number, combine the He and Ne arc frames)
Skip all the very faint lines (if there are not always found).
Order 5 seems to be the best, but orders 3 to 7 could work too.
 - You must have a **.dat** file with enough/all line which are easily/always identified.
 - The RMS in the reidentify task depends of the resolution ... should be around 0.05 in Echelle mode but around 1 for low resolution grating
 - You may
- Sky subtraction is still VERY crude, and may not work, depending of the quality of the sky offset frames. You probably have to apply a different scaling factor (yet from the exposure times).

5.2 Some help for “known” problems which can (still) occur

- Reidentify: doesn’t always find all the lines. It is best to identify at least 4-6 lines for first identification (specially with an order 3-5 for the fit).
If you find that the program can not find the lines in all fibres using reidentify ensure that you have defined as many lines as possible with identify. It usually works if 7 or more lines are identified.
- If something wrong occurs during the **DOFIBER** task (step 3), you may need to delete completely the subdirectory **database** (or choose option REDO=”yes”) otherwise some steps during the task will **not** be done again, leaving some or all the problems.
- The pipeline is set up for a bash shell if you are using a tcsh shell you might be required to replace **!./listFIL** to source **listFIL**. There are 4 of these commands situated in wyffosREDUC.cl.
- Sky subtraction too crude (still NOT using the long integration other sky fibers)

6 Annexe 1: example of the command epar wyffosREDUC

Example listing with BIAS, ARC, FLAT, SKY and OBJECT exposures

```
r930101.fit[1][2150,2100][ushort]: Bias
r930102.fit[1][2150,2100][ushort]: bias
r930103.fit[1][2150,2100][ushort]: bias
r930104.fit[1][2150,2100][ushort]: bias
r930105.fit[1][2150,2100][ushort]: bias
r930106.fit[1][2150,2100][ushort]: bias
r930107.fit[1][2150,2100][ushort]: bias
r930108.fit[1][2150,2100][ushort]: bias
r930109.fit[1][2150,2100][ushort]: bias
r930110.fit[1][2150,2100][ushort]: bias
r930111.fit[1][2150,2100][ushort]: bias
r930115.fit[1][2150,2100][ushort]: arc He
r930116.fit[1][2150,2100][ushort]: arc He
r930117.fit[1][2150,2100][ushort]: arc He
r930118.fit[1][2150,2100][ushort]: arc He
r930119.fit[1][2150,2100][ushort]: arc He
r930121.fit[1][2150,2100][ushort]: ff
r930122.fit[1][2150,2100][ushort]: ff
r930123.fit[1][2150,2100][ushort]: ff
r930124.fit[1][2150,2100][ushort]: ff
r930125.fit[1][2150,2100][ushort]: ff
r930127.fit[1][2150,2100][ushort]: Gr 600B 3x1800s
r930128.fit[1][2150,2100][ushort]: Gr 600B 3x1800s
r930129.fit[1][2150,2100][ushort]: Gr 600B 3x1800s
r930130.fit[1][2150,2100][ushort]: Gr 600B 1800s
r930131.fit[1][2150,2100][ushort]: Gr 600B off1
r930132.fit[1][2150,2100][ushort]: Gr 600B off2
r930133.fit[1][2150,2100][ushort]: Gr 600B off3
r930134.fit[1][2150,2100][ushort]: Gr 600B off4
r930135.fit[1][2150,2100][ushort]: arc He
```

Identification for Helium lines of grating R600B

```
idheliumB600.dat
# units Angstroms
3889.74      HeI
3965.85      HeI
4027.33      HeI
4389.162     HeI
4472.75      HeI
4714.47      HeI
4923.305     HeI
5017.076     HeI
5049.146     HeI
5877.26      HeI
6679.996     blend HeI 6678.149 with NeI 6678.2764
```

Example of editing the **wyffosREDUC.cl** IRAF task

```

                                I R A F
                                Image Reduction and Analysis Facility

PACKAGE = mscred
TASK = wyffosREDUC

fiche =      listR316  File LIST of images to be treated ?
(imFF =      ffrR316) FlatField prefix ?
(imARC =      arcR316) Arc prefix ?
(imSKY =      skyR316) SKY prefix ?
(imOBJ =      objR316) Object prefix ?
(tabCON2=      ic342.cfg) fiber table ?
(tabARC =      idneonR316.dat) Arc file
(lieu =      MAC) SLO or MAC or ROQUE ?
(datBASE=      databaseR316) Directory for database
(fibSIZ =      small) Fiber size (small or large)
(biasMEA=      yes) Skipping mean BIAS creation? (no/yes)
(biasTRI=      yes) Skipping BIAS Trimming ? (no/yes)
(process=      yes) Skipping CCDproc all files but biases (no/yes)
(combFF =      yes) Skipping combining ? (no/yes)
(combARC=      yes) Skipping combining ? (no/yes)
(combOBJ=      yes) Skipping combining ? (no/yes)
(RUNdofi=      yes) skip dofiber ? (no/yes)
(RUNcopy=      yes) skip scopy ? (no/yes)
(IDENTIF=      yes) skipping identify ? (no/yes)
(IDENARC=      yes) Helium ? (no/yes)
(CALwave=      yes) skipping reference and skies ? (no/yes)
(test8 =      yes) skipping objects ? (no/yes)
(allspec=      no) plot all spectra ? (no/yes)
(flist =      LIST_sky)
(mode =      ql)
```

7 Annexe 2 : shapshots

8 Annexe 3 : Arcs

Arc Helium R300B $\lambda_c=6600\text{\AA}$





