INTEGRAL Package Installing Manual

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Introduction

In this manual it explained the proceeding for the attainment and installing of the *integral* package, which has been developed for the treatment and reduction of the data obtained using the fiber optics system INTEGRAL (*Ref.:* INT-IAC-MNL-002).

Attainment of the *integral* package

As soon as possible, we will put the different source programs of the *integral* package in the following WWW address:

http://www.iac.es/proyect/integral/index.html,

Meanwhile, you can get a copy of these contacting with sam@ll.iac.es. These files are attached in a TAR-file called *integral.tar* (in /net/viola/scratch/santiago/um/).

Files of the *integral* package

The files of the *integral* package are:

- SB#.data and SB#.status (#:1, 2 and 3), and databundles.txt, or files required to reconstruction of images.
- example.ref, which is an input file example of *int_daref* task.
- int_daref.cl, int_nspec.cl, int_fwhm.cl, int_fwhm1.cl, int_hart.cl, int_map.cl, int_hart1.cl, int_rec.cl, int_spd1f.cl, int_spdXf.cl, int_stat.cl, int_xyfib.cl, integral.cl, ms2ascii.cl and readfxcor.cl. These are the scripts of the *integral* package.
- int_interpol.f, int_invert.f, int_refrac.f, int_status.f, readap.f, readap2.f, trace_fiber.f. These are the FORTRAN programs.
- integral.men, _integral.hd, integral.hd, integral.hlp and root.hd. These are the different files required to get the *integral* package help.
- int_daref.hlp, int_spd1f.hlp, int_spdXf.hlp, int_fwhm.hlp, int_stat.hlp, int_xyfib.hlp, ms2ascii.hlp , int_hart.hlp and int_map.hlp. These are the help files of the *integral* tasks.

Installing the *integral* package

In order to install the *integral* package in LOCAL, only the system manager will have the authority and the privileges ("IRAF Site Manager's Guide").

Nevertheless, whoever user can install the *integral* package for personal use. In this case, the user have to put the *integral* like a personal package. In order to do this, follow the steps:

1) All the files of the *integral* package must be in the same directory[1] (e.g..: /package/integral), with the exception of the files with extension ".hlp", which have to be in a subdirectory called doc (e.g. /package/integral/doc), and the files databundles.txt and example.ref, which have to be in a subdirectory called database [2].

You can create the above structure from the *integral.tar* file, typing:

/package> **tar -xvf integral.tar**

2) If you log into IRAF [3] for the **first time** [4], you have to execute **mkiraf**, **else go to next point (3)**. In the first case, for execute mkiraf:

/package/integral> **mkiraf**

On the display, will appear:

Terminal types: xgterm, xterm, vt640, vt100, etc. Type **xgterm**. On the display, will appear:

You may wish to review and edit this file to change the defaults.

Create a new loginuser.cl? (y/n):

Type **y**. On the display, will appear:

— creating a new loginuser.cl

You may wish to review and edit file loginuser.cl to add your own definitions (see the next point).

3) Edit or create (see the above point) the file loginuser.cl

This is an example of a 'loginuser.cl':

```
# Begin of the loginuser.cl file
# User package definitions
# select your favorite editor here
# set editor = vi
# set editor = emacs
# define user package tasks here
cl < /soft/iraf/iraf/local/user_login/loginuser.glob
# load more packages here
task $integral = /package/integral/integral.cl
reset helpdb = (envget ("helpdb") // ",/home/cburgo/integral/helpdb.mip")
```

[1] At the WHT system, select the directory from which the system log into IRAF

[2] This subdirectory database have to be in the same subdirectory where you have the INTEGRAL images. It is noteworthy that this subdirectory is not necessarily the same subdirectory where is the tasks of the *integral* package

[3] The the *integral* package has been developed for Version of Sun/IRAF V2.10.4 but can be also used in for V2.11. The the *integral* package use tasks of the following packages: *noao*, *imred*, *specred* and *onedspec*

[4] This is not the case if you are installing the *integral* package at the WHT

stty xgterm

keep

End of the loginuser.cl file

Observe the latter rows after **# load more packages here** of the example of 'loginuser.cl'. **Write at the end of your file loginuser.cl (according to our example)**:

task $integral = /package/integral/integral.cl

reset helpdb = (envget ("helpdb") // ",/home/cburgo/integral/helpdb.mip")

stty xgterm

keep

The instruction "task $integral=/package/integral/integral.cl" (See Appendix I) corresponds to the definition for the *integral* package.

4) In the directory /package/integral/ (according to our example) **edit integral.cl** (see Appendix I), and **change /package/integral/ by the subdirectory where are the integral tasks**.

Edit integral.hd and change /package/integral/ by the subdirectory where are the integral tasks.

5) Change to the directory /package/integral/ (according to our example):

/package/integral/doc> **cd ..**

Open a terminal xgterm:

/package/integral> **xgterm&**

And log into IRAF [5]:

/package/integral> **cl**

To compile and link (producing an executable) inside IRAF the different INTEGRAL Fortran [6] proprams (files with the extension ".f"), you have to do:

cl> **fc int_invert.f**

cl> **fc int_refrac.f**

cl> **fc int_status.f**

cl> **fc readap.f**

cl> **fc readap2.f**

[5] If you have installing this on WHT there are a special form to inicialize IRAF

[6] This programs have been implemented inside the IRAF environment with the IMFORT Interface (see *A User's Guide to Fortran Programming in IRAF. The IMFORT Interface.* Doug Tody. NOAO. September 1986).

cl> **fc trace_fiber.f**

To obtain the executable INTEGRAL program *int_interpol.f*, which need link two NAG library functions (E01SAF and E01SBF), you have to do:

cl> **fc -c int_interpol.f**,

to compile this file and produce the object int_interpol.o. And:

cl> **fc int_interpol.o -lnag**,

to link the NAG library [7].

6) The instruction "reset helpdb= ...." allow us to introduce the different help files for INTEGRAL (integral.hlp, integral.hd, _integral.hd, root.hd, helpdb.mip [8], and the files with extension ".hlp"). In order to install the help (see Ed Anderson. Revised by Rob Seaman. NOAO. September 1989, for more details), you have to load *softools* and execute *mkhelpdb*:

cl> **softools**

cl> **mkhelpdb root.hd helpdb.mip**

The the *integral* package has been already installed. You can log out:

cl> **logout**

Using the *integral* package

Now, we can login in IRAF from the directory where has been installed the integral package:

/package/integral> **cl&**

And we can access to the *integral* tasks typing the *integral* inside IRAF to load this package (like a current IRAF task):

cl> **integral**

Then, you can see a general help of integral typing [9]:

cl> **help integral option=sys**

For get a general help of the several integral tasks, type:

cl> **help integral**

[7] lnag is an alias to refer the NAG library

[8] see Appendix I

[9] If the *integral* package has been installed in LOCAL ("IRAF Site Mananger's Guide"), you have not to type helpdb "(int_helpdb)"

And to get help of a particular INTEGRAL task (e.g. *int_hart*) you have to type:

cl> **help int_hart**

We will be generally interested in work in other directory (e.g. /package/images/). Then change to this directory:

cl> **cd /package/images/**

This is the moment to prepare the files required to the recontruction of the images. For do it, verify that exists the directory database. **If this is no already in existance, do:**

cl> **mkdir database**

Now, do a **copy** of the file databundles.txt from /package/integral/database/ (according to our example):

cl> **cp /package/integral/database/databunbles.txt database**

And the files SB1.data, SB2.data, SB3.data, and SB1.status, SB2.status and SB3.status from /package/integral/ (according to our example):

cl> **cp /package/integral/database/SB.* .**

And then, run *int_status*:

cl> **int_status**

Now, you have the files SB#.coor (#: 1, 2, 3) required to perform an image reconstruction with *int_rec*. You can also use these files as input file ifor *int_map* after including between their 3rd and 4th columns the parameter to reconstruct.

If the user want to use *int_daref* he can copy the example of input file from subdirectory /package/integral/database/ (according to our example):

cl> **cp /package/images/database/example.ref .**

Now, you can use the *integral* package (see *Ref.:* INT-IAC-MNL-004 for a description of the *integral* tasks).

Appendix I

The following is the file 'integral.cl' of the *integral* package: # Begin of the 'integral.cl' file

Package script task for the *integral* package

Performed by Carlos del Burgo (e-mail: cburgo@ll.iac.es).

load necessary packages

noao

imred

specred

onedspec

dataio

stsdas

graphics

stplot

set pathintegral = /package/integral/

set put = /package/integral/doc/

package integral

print("##")

print(" the *integral* package ")

print(" Tasks developed at the IAC ")

print(" The tasks in this package are being tested. If you have any problem or suggestion, please contact with: ")

print(" ")

print(" Carlos del Burgo (E-MAIL:cburgo@ll.iac.es) ")

print(" ")

print("##")

set help = "put$integral.db"

#These are the *integral* tasks avaliable inside IRAF environment:

task int_hart1 = "pathintegral$int_hart1.cl"

task int_hart = "pathintegral$int_hart.cl"

task int_fwhm1 = "pathintegral$int_fwhm1.cl"

task int_fwhm = "pathintegral$int_fwhm.cl"

task int_stat = "pathintegral$int_stat.cl"

task ms2ascii = "pathintegral$ms2ascii.cl"

task readfxcor = "pathintegral$readfxcor.cl"

task int_map = "pathintegral$int_map.cl"

task int_rec = "pathintegral$int_rec.cl"

task int_spd1f = "pathintegral$int_spd1f.cl"

task int_spdXf = "pathintegral$int_spdXf.cl"

task int_nspec = "pathintegral$int_nspec.cl"

task int_xyfib = "pathintegral$int_xyfib.cl"

task int_daref = "pathintegral$int_daref.cl"

#These are three FORTRAN programs executables inside IRAF environment:
task $int_interpol = "$/package/integral/int_interpol.e"
task $int_invert = "$/package/integral/int_invert.e"
task $readap = "$/package/integral/readap.e"
task $readap2 = "$/package/integral/readap2.e"
task $int_refrac = "$/package/integral/int_refrac.e"
task $int_status = "$/package/integral/int_status.e"
clbye()
# End of the 'integral.cl' file

The following is the file 'integral.hd' of the *integral* package: # Help directory for the *integral* package
$doc = "/package/integral/"
int_hart1 hlp =doc$int_hart1.hlp, src=int_hart1.cl
int_hart hlp =doc$int_hart.hlp, src=int_hart.cl
int_fwhm1 hlp =doc$int_fwhm1.hlp, src=int_fwhm1.cl
int_fwhm hlp =doc$int_fwhm.hlp, src=int_fwhm.cl
int_stat hlp =doc$int_stat.hlp, src=int_stat.cl
ms2ascii hlp =doc$ms2ascii.hlp, src=ms2ascii.cl
readfxcor hlp =doc$readfxcor.hlp, src=readfxcor.cl
int_map hlp =doc$int_map.hlp, src=int_map.cl
int_rec hlp =doc$int_rec.hlp, src=int_rec.cl
int_spd1f hlp =doc$int_spd1f.hlp, src=int_spd1f.cl
int_spdXf hlp =doc$int_spdXf.hlp, src=int_spdXf.cl
int_nspec hlp =doc$int_nspec.hlp, src=int_nspec.cl
int_xyfib hlp =doc$int_xyfib.hlp, src=int_xyfib.cl
int_daref hlp =doc$int_daref.hlp, src=int_daref.cl

The following is the file '_integral.hd' of the *integral* package:

Help definitions for INTEGRAL itself
$doc= "/package/integral/doc/"
integral men = doc$integral.men,
hlp = ..,
sys = doc$integral.hlp,
pkg = doc$integral.hd,
src = doc$integral.cl

The following is the file 'integral.men' of the *integral* package:

int_hart1 - Hartman test for a couple of images
int_hart - Hartman test for a list of couples of images
int_fwhm1 - FWHM of 2D image lines array
int_fwhm - FWHM of lines array for a list of 2D images

int_stat - Statistics data for a list of images

ms2ascii - Convert a multispec format 2D image to ASCII format spectra

readfxcor - Export to a file the values of radial velocities or widths of fxcor

int_map - 2D reconstruction from a ASCII file with fiber number, x, y, parameter to be mapped and fiber status columns columns

int_rec - 2D reconstruction from a non-reduced 2D image

int_spd1f - Spatial shift between two images for a fiber

int_spdXf - Spatial shift between two images for a fiber list

int_nspec - Calibrated and extracted spectrum of a fiber

int_xyfib - Show on display xcenter and ycenter 'apfile' parameters

int_daref - r.a. and dec. shifts produces by differential atmospheric refraction

The following is the file 'root.hd' of the *integral* package:

_integral pkg = _integral.hd