

Installation of GDL

The software package *GNU Data Language* (GDL) can be downloaded from the project's [homepage](#). However, it is recommended to use the package manager of your Linux/Mac/BSD. On Ubuntu/Debian and their derivatives just execute:

```
sudo apt-get install gnudatalanguage
```

IDL Astro Library

For the use in the lab courses the *IDL Astro Library* is also required. It can be downloaded at:

<http://idlastro.gsfc.nasa.gov/homepage.html>

In the next step the following directory

```
/home/user/opt/gdl-astrolib/
```

should be created. Here and in the following, user should be replaced by the name of the corresponding user account. Afterwards the archive (*astron*) can be unpacked there. Furthermore, it is necessary to change the following lines of the file *readfits.pro* in the directory *pro*:

Line:	ndata = product(dims,/integer)
replace by:	ndata = dims[0]

Additionally create a file *fitsconvert.pro* with the following content:

```
function fitsconvert,image
if n_elements(image) eq 0 then begin
  print,'Usage: converted_image=fitsconvert,original_image'
  return,0
endif
erg=(long(image)+65536) mod 65536
return,erg
end
```

in the directory */home/user/opt/gdl-astrolib/*.

[Additional routines for the lab course](#)

For the astrophysical lab course (especially for C7 and N2) the following routines are additionally required and should also be placed in */home/user/opt/gdl-astrolib/*: *correl_images.pro*, *newremove.pro*, *newsrccor.pro*, *la_cosmic.pro*, *mxaddpar.pro*, and *datatype.pro* (all can be found in our SVN).

Start-up script

To use the *AstroLib*, create an additional start-up script that exports the paths of the libraries. This script can e.g. be saved as hidden file in the home directory (e.g. `$HOME/.gdl_startup`). If the directory `astron` and the file `fitsconvert.pro` are placed in `/home/user/opt/gdl-astrolib`, the start-up script would look like:

```
!PATH=!PATH + ':/usr/bin/'  
!PATH=!PATH + ':/home/user/opt/gdl-astrolib/astron/pro'  
!PATH=!PATH + ':/home/user/opt/gdl-astrolib'  
loadct,0, ncolor=255;  
!P.BACKGROUND=255;  
!P.COLOR=0;  
!X.STYLE=1;  
!Y.STYLE=1;  
!Z.STYLE=1  
print,'';  
print, '*****';  
print, '** Personal settings are loaded and active **';  
print, '*****';  
print,'';
```

The first line contains the link to the executable `gdl` file. The second/third line contains the path to the `.pro` files in the `astron` directory and the file `fitsconvert.pro` (adjust paths as needed).

If the start-up script located in the directory `/home/user/`, one can prepare it for the usage in the Bash shell by adding the following line

```
export GDL_STARTUP=/home/user/.gdl_startup
```

to the `.bashrc` script in the home directory.

Final advice for the usage in the lab course

For the laboratory computer `a12`, the installation should take place under the `pollux` account, while the very last step of the setup needs to be executed for the student accounts as well. Note that also for these accounts `user` must be replaced by `pollux`.

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