IFT School on Cosmology Tools

Installation instructions for cfitsio, Healpix and CAMB.

A) Prerequisites
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C) cfitsio
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E) CAMB

A) Prerequisites
You need gcc/gfortran 5.3.0+ in Linux, MacOS or Windows (via Cygwin), plus the utilities ssh, make and a file transfer client like Filezilla or something similar.

B) Downloads
Get the codes from here:

cfitsio (at least version 3.410):
http://heasarc.gsfc.nasa.gov/fitsio/ (NASA site)
http://pkgs.fedoraproject.org/repo/pkgs/cfitsio/ (Fedora repository in case NASA is down)

Healpix:
http://healpix.jpl.nasa.gov/
http://sourceforge.net/projects/healpix/

CAMB:
http://camb.info/

C) cfitsio2
1) Unzip in some folder and cd to that folder (NOTE: text in bold corresponds to console commands)
2) Type: ./configure (and wait until it finishes...)
3) Type: make libcfitsio.a (and wait until it finishes...)
4) Copy to Healpix or anywhere else needed or put in /usr/local/lib
1 Instructions for the other programs (CosmoMC etc) will be given by the Lecturers during the courses.
2 cfitsio is a library for the manipulation of FITS files, used by other cosmological codes.

D) Healpix
1) Type: ./configure -L (see documentation for the -L stuff...)
2) Choose one of the options, eg 3 for fortran
3) Give the compiler name: gfortran
4) Use the default options for the directories (just hit enter!)
5) Choose to create them: Y
6) Accept the defaults for the compiler flags and optimization flags
7) Choose the C compiler: gcc
8) Accept the defaults for the gcc flags, the library archiving command and cfitsio
9) If you put cfitsion in /usr/local/lib hit enter otherwise specify the path. If you copied it in the default Helpix folder then just ./

10) Type N if you don't want PGPlot
11) Type 1 for the parallel implementation and yes Y for PIC
12) Type no N for the shared library.
13) Type no N for the modification to the config files and choose 0 to exit!
14) Type make f90-all to make the fortran files. Similarly for the rest.
15) Type make test to to test programs!
16) The various programs and how to use them, will be explained during the courses.

E) CAMB
1) Type make all and wait until it's finished.
5) To run camb type ./camb ./params.ini and wait
6) Several files will be created that will contain the CMB power spectra etc. All of these will be explained in the courses.
7) To run CAMB in parallel you can use the command: export OMP_NUM_THREADS=4 where you can replace the number 4 with the desired number of cores you want to use on your system.
8) Note the params.ini file contains various options that adjust the physics or calculate different quantities. These will be explained during the courses.

For questions regarding these instructions feel free to contact savvas.nesseris@csic.es