The DRAO Export Software Package

Rencontre des étudiants du - CRAQ 2011- Student Meeting

22 au 24 août 2011 / August 22th-24th, 2011

Université de Montréal

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Introduction

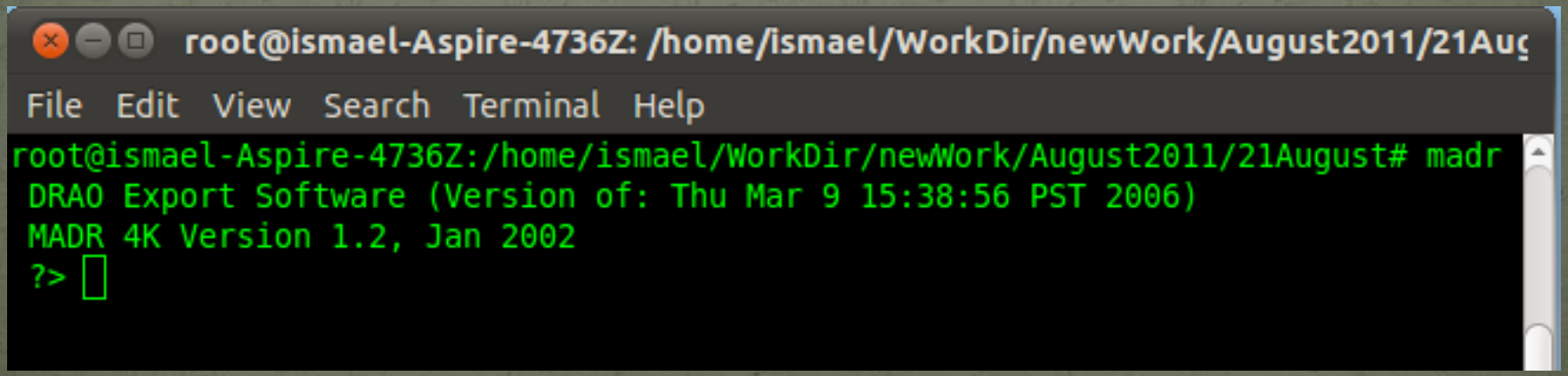
- Developed at the Dominion Radio Astrophysical Observatory (DRAO)
- Free package
- Come from the needs of the funding of the Galactic Plane Survey project

DRAO application software :

- a) Visibility processing and map making
- b) Coordinate transformations
- c) Display of astronomical (continuum) images
- d) Analysis of astronomical (continuum) images
- e) Display of astronomical (spectral) data cubes
- f) Analysis of astronomical data cubes and spectra
- g) Modelling of data
- h) Input and output of data
- i) Extraction of survey data
- j) Analysis of topographic-map data
- k) Software related to 26-m Telescope spectral data
- l) Miscellaneous

Examples: madr (manipulation and data review)

- General manipulation and mathematical operations on image data
- Operations:
  - data subsetting, data listing and editing, transposition, Fourier transforms, array arithmetic, collapsing along a principal axis, derivation of statistical parameters,



Examples: madr (manipulation and data review)

root@ismael-Aspire-4736Z: /home/ismael/WorkDir/newWork/August2011/21Aug

File Edit View Search Terminal Help

```
Definition (FILE) no.:   1
  File name:          CGPS_MN1_408_MHZ_IMAGE.001
  Data type:          R
  Sizes: E = 1024( 1, 1024, 1); R = 1024( 1, 1024, 1)
  Effective sizes:    E 1024   R 1024
  No-data value:      -999.00
  Units:              1 K (Tb)
  File type:          RD                  Sky projection:    G

  Coordinates:             GAL LONG            GAL LAT
  Reference coord.:   x: 80.75000D        y: -1.00000D
  Reference pixel:    x: 513.00 (pix)     y: 513.00 (pix)
  Delta coord.:       x: 0' 18.000"       y: 0' 18.000"


  Central Hel. Freq.: 408.00000 MHz       Stokes parameter:  I
  Data-set Bandwidth: 0.0000 MHz          Observation epoch: 2020.00
  Last changed by: rfits            on 20-JUL-2011

  MN1 C74 MOSAIC

?> MAN
M> F100=F50+F11
```

Examples: plot

- Plot: more sophisticated (publication-quality) hard-copy and screen (via postscript files and "ghostview") display of image/data cubes

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File Edit View Search Terminal Help

```
root@ismael-Aspire-4736Z:/home/ismael/WorkDir/newWork/August2011/21August# plot
 DRAO Export Software (Version of: Thu Mar 9 15:38:56 PST 2006)
 PLOT 4K Version 1.2, Jan 2002
 Do you want to create a log? [Y]:
 Is log file to be printed on exit? [N]:
   Log file will be: PLOT_N22AUG11011427.LOG
   Note that log will be printed only on exit via QUIT!
   (Otherwise, log file must be printed/deleted by user.)
   Is log to contain detailed listing of executed boxes? [Y]:

 Use "MARK" to turn off/on plot corner marker and ID line!

 P>
```

The concept of Dataset

- Dataset: One, two, or three-dimensional collection of data
- One and two-dimensional : Single files
- Three-dimensional data : Ensemble of files where each file corresponds to a given Z coordinate

The concept of Dataset

root@ismael-Aspire-4736Z: /home/ismael/WorkDir/newWork/August2011/21Aug

File Edit View Search Terminal Help

```
?> sh f 1

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  Data type:          R
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  Effective sizes:    E 1024   R 1024
  No-data value:      -999.00
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?>
```

Examples: specindex

- Specindex: use data at two frequencies to derive spectral-index map, TT-plots, and thermal/non-thermal separation

Download the package

- http://www.drao-ofr.hia-iha.nrc-cnrc.gc.ca/pub/