EXERCISE 1 - Running NDPPP

A detailed description on how to run NDPPP is given in the latest LOFAR imaging cookbook (Chapter 4),

http://www.mpa-garching.mpg.de/~fdg/LOFAR_cookbook/

AIMS: Become familiar with the LOFAR RFI flagging and data compression software

DETAILS: The local environment of the Netherlands requires the automated removal of RFI from the science datasets. This RFI can be both narrow- and broad-band, and vary in time. Optimally, the RFI removal will be carried out automatically, without user intervention. The student will use the New Data Pre-Processing Pipeline (NDPPP) to remove radio frequency interferences and compress the data in time and frequency.

LEARNING OBJECTIVES:

1. Inspect raw LOFAR data
2. Run NDPPP to flag and compress data
3. Test changing RFI flagging windows
4. Test flagging particular baselines, uvranges
5. Understand the limitations of NDPPP (quality of RFI detection, processing speed)
6. Be able to run NDPPP competently on any LOFAR dataset

PROCEDURE: To run NDPPP,

> NDPPP NDPPP.parset (Note that the location of the parset file is arbitary)

The NDPPP.parset file contains all of the input parameters. An example NDPPP.parset file can be found at,

> cp /home/rafferty/NDPPP_* .

Details of the various parameters can be found in the LOFAR imaging cookbook (Chapter 4)

DATA: Two datasets will be used for this task,

1. LBA: 10 minutes on-source, single sub-band at 41 MHz with a bandwidth of 0.2 MHz (256 channels). 16 core-stations were used to take this dataset. The total size is 760 Mb (x 248 for the full dataset).

location: /net/sub3/lse007/data3/L2010_08567/SB54.MS

2. HBA: 10 minutes on-source, single sub-band at 134 MHz with a bandwidth of 0.2 MHz (256 channels). 25 core and remote stations were used to take this dataset. The total size is 518 Mb (x 248 for the full dataset).

location: /net/sub3/lse008/data3/L2010_20205/SB120.MS

STEPS:

a. inspect the raw measurement set details with “msinfo” (Chapter 2.1)
b. view the raw data to see the RFI before flagging (Chapter 2.3 -- 2.4)
c. run the NDPPP_RFI_pipe.parset to flag the rfi (Chapter 4)
d. inspect the new measurement set you have created (Chapter 2.3 -- 2.4)
e. run the NDPPP_compress_pipe.parset to compress the data (Chapter 4)
f. inspect the new measurement set you have created (Chapter 2.3 -- 2.4)
g. try using the “alt” NDPPP parsets and inspect the results (Chapter 4)
h. try flagging only core-station CS004, and baseline CS001:CS007 (Chapter 4)
i. try flagging all of the short baselines between the core-station ‘ears’ (Chapter 4)