**Gnuradio:-**

1)usrp\_rx\_to\_file.grc

Receives data from receiver usrp and save it to rx.dat

2)usrp\_tx\_from\_file.grc

Transmit data from tx.dat file from selected usrp

3)usrp\_tx\_from\_file\_two.grc

Two transmit usrps , passing data of selected file to particular usrp

**Matlab:-**

1)read\_usrp\_data\_file.m

Extracts the content from rx.dat to further process in matlab

2)write\_usrp\_data\_file.m

Prepare .dat file for usrp to transmit

3)rec.m

Demodulation, remove cp

Calculate channel information

4)trans.m

Prepares data to transmit , modulation-ofdm,add cp ,prepare tx1

5)null.m

Find **‘p’** according to h1 and h2 in order to null

6)trans2.m

Prepare tx2 which is orthogonal to tx1

**Process of execution:-**

Run trans.m in matalb - will create dat.mat, tx.dat, x.mat, preamble.mat, training.mat

Run usrp\_rx\_to\_file.grc - start receiving session

Run usrp\_tx\_from\_file.grc - transmission

Terminate receive session after complete transmission -rx.dat generated

Run rec.m in matlab - save avg\_h as h\_(usrp\_add).mat (ex. **h\_201.mat**, transmitted from 10.20.16.201)

Transmit from both antennas one by one and save it’s channel value(**h**)

Then run null.m - calculate and save **p.mat**

Change name of file in write\_usrp\_data\_file to **tx\_1.dat**

Run tran2.m - prepare tx\_1.dat

Run usrp\_rx\_to\_file.grc

Run usrp\_tx\_from\_file\_two.grc

Run rec.m

Type in command window of matlab - pmusic(y\_data,8)