

# raw\_tbb\_IO

Or the things to think about when reading data

# Data format

- HDF5 files
  - Hierarchical data format
- Described in “LOFAR ICD 001 TBB Time series”  
[https://www.astron.nl/lofarwiki/doku.php?id=public:documents:lofar\\_documents&s\[\]=lofar&s\[\]=usg&s\[\]=icd](https://www.astron.nl/lofarwiki/doku.php?id=public:documents:lofar_documents&s[]=lofar&s[]=usg&s[]=icd)
- Data of individual antennas/tiles
- Grouped per station (but one file per station, currently)

# Antenna connections

- Data is received per antenna at each receiver unit (RCU)
- Each antenna has a name consisting of [Station ID][RSP ID][RCU ID].
- Examples: 005001008 (Station 5, RSP 1, RCU 8)
- Which antenna: RCU + Antenna\_set (LBA\_INNER, LBA\_OUTER, HBA)
- Polarisation
  - For LBA\_INNER and HBA, Even RCU: X-pol, Odd RCU Y-pol
  - For LBA-OUTER, even RCU: Y-pol, odd RCU X-pol
- Sometimes antennas are wrongly connected in the field (X-Y swap)

# Obtaining data

- UDP transfer
  - Missing blocks (1024 samples, for one antenna)
  - File ends if no data is received => Sometimes multiple files per stations
  - Timestamp offsets between antennas
- LoLIM corrects for these issues

# Task 2

- Find the lightning!
- Plot the maximum value of every block
- Select a block with lightning and plot that
- Use the zoom function to examine the data