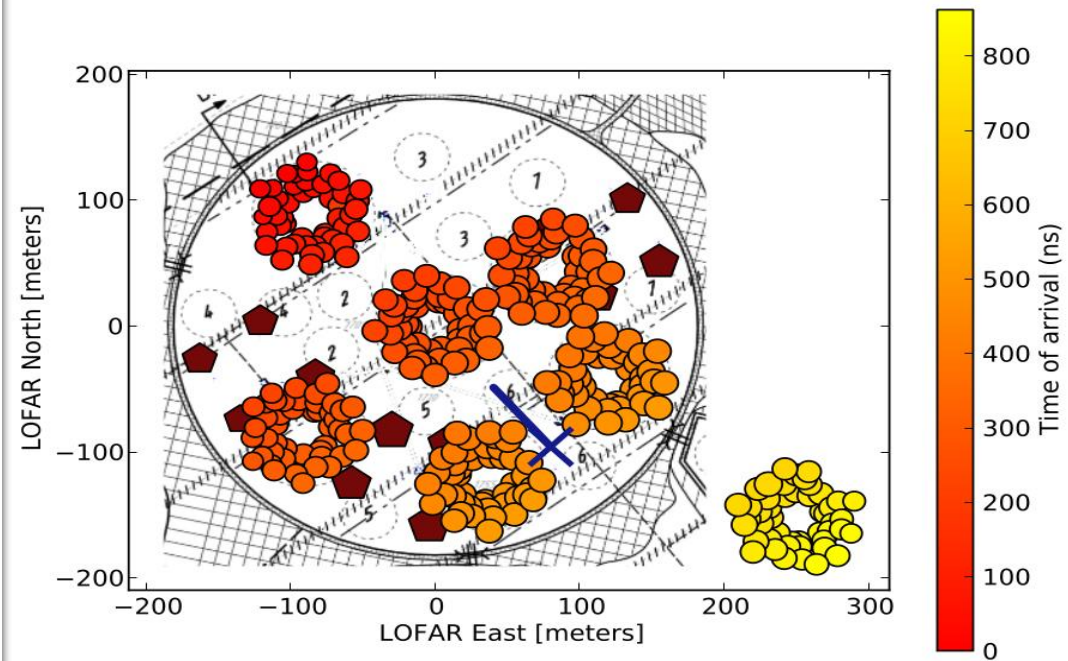
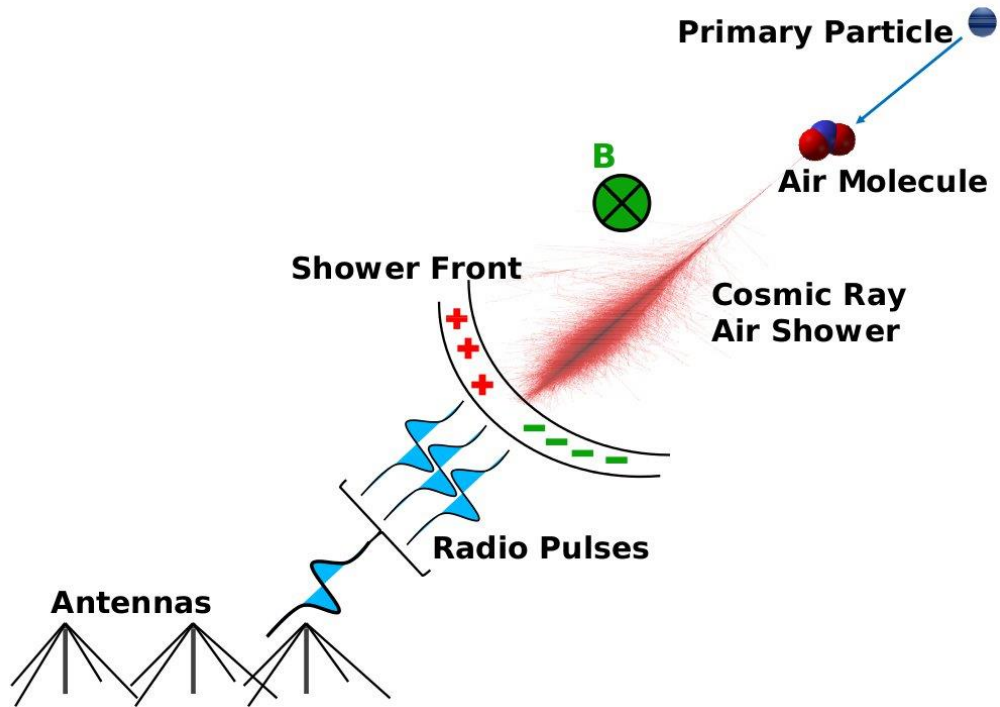


LOFAR Calibration status update

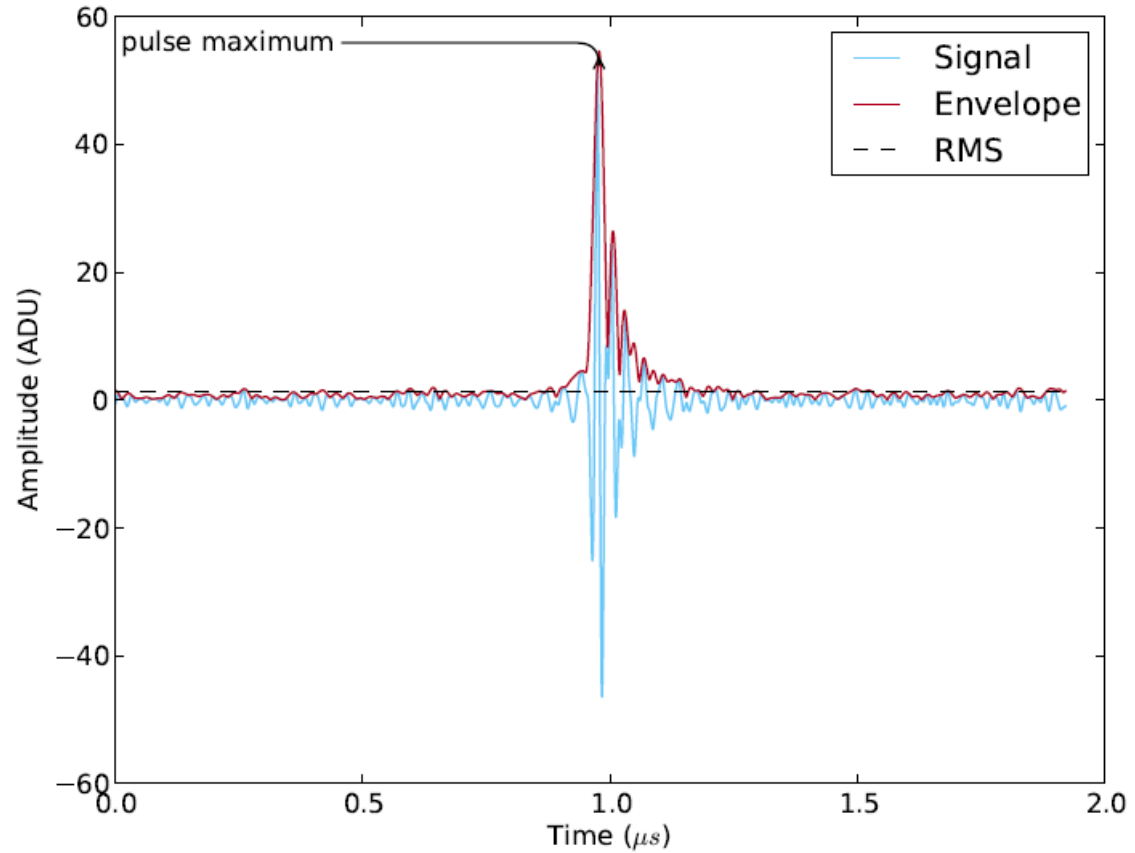
Calibration campaign 13/05 – 15/05

Detection of cosmic ray by LOFAR superterp



Ref: P. Schellart et al (2013)

What we have:



What we want:

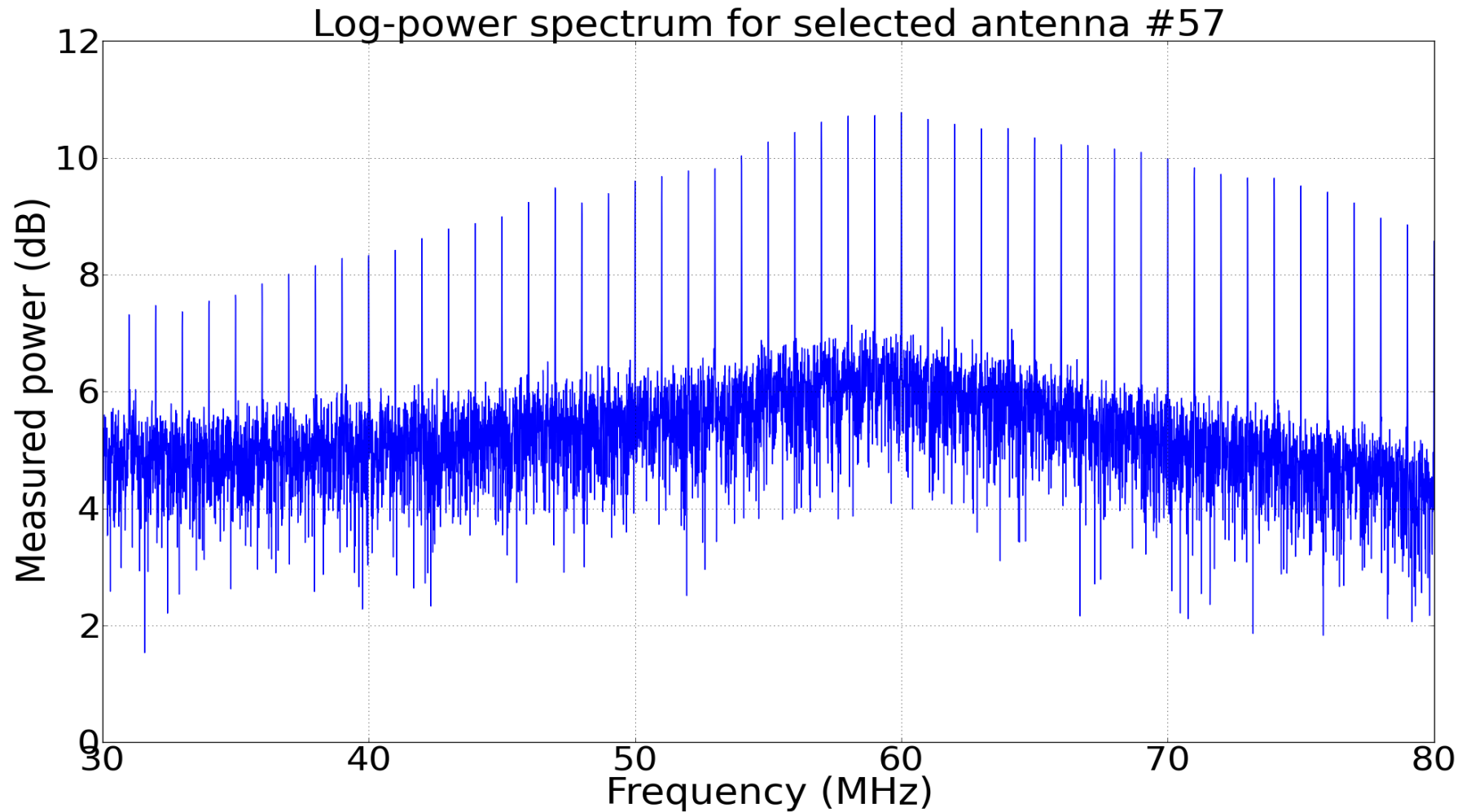
$$|FFT(AD\ units)|^2 \propto Power = a \cdot E^2$$

Method

- 10 meter above LBA:
Transmission antenna (DPA 4000)
with comb generator (RSG 1000)
- Several TBB dumps (10 ms) per
sample
- Measure:
 1. LBA Inner (CS001P036) &
Outer (CS001P076)
 2. Polarization
 3. Far-field $\left(r > 2 \frac{v D^2}{c} \right)$
- Same method used by LOPES

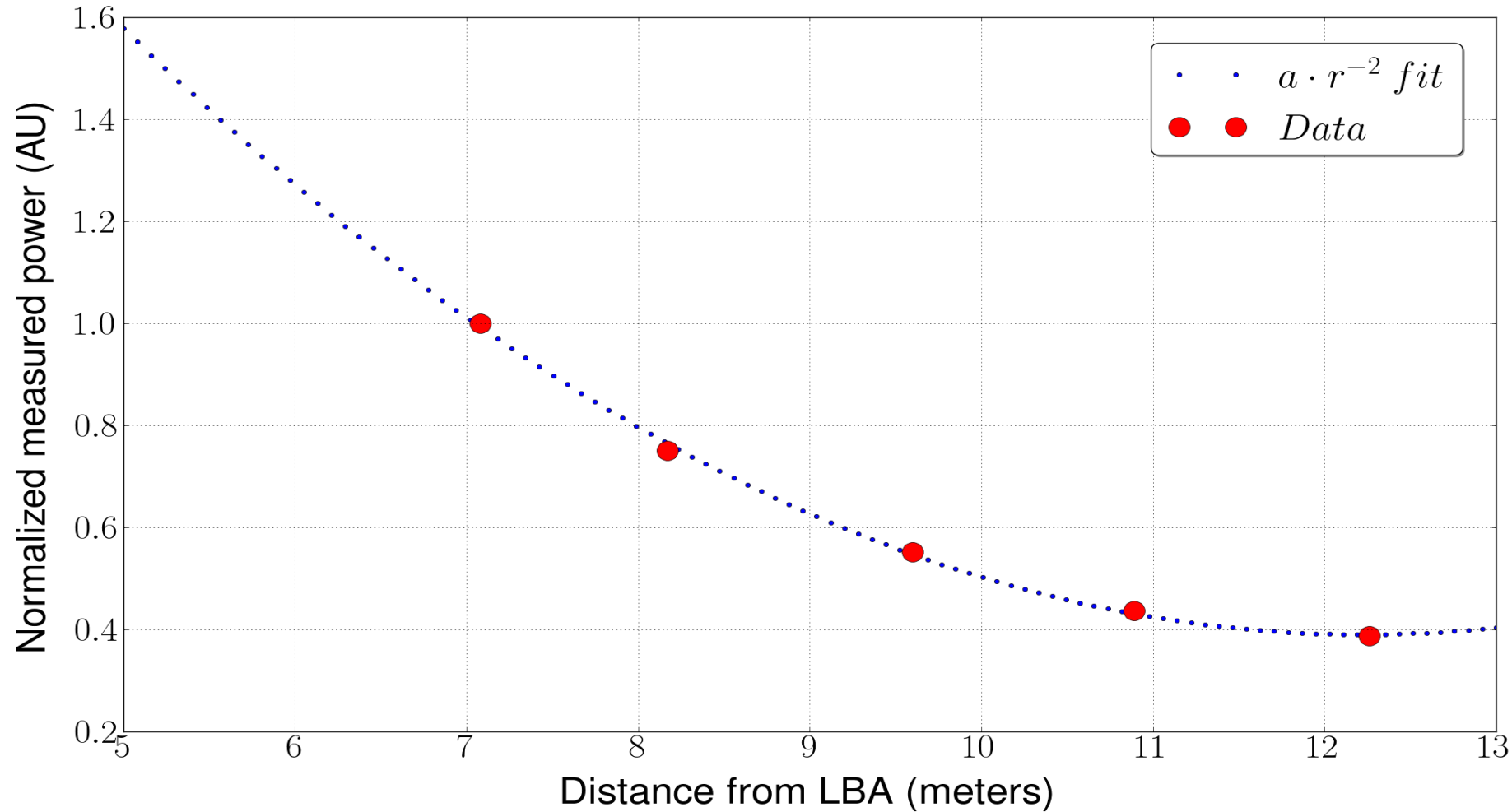


Example output



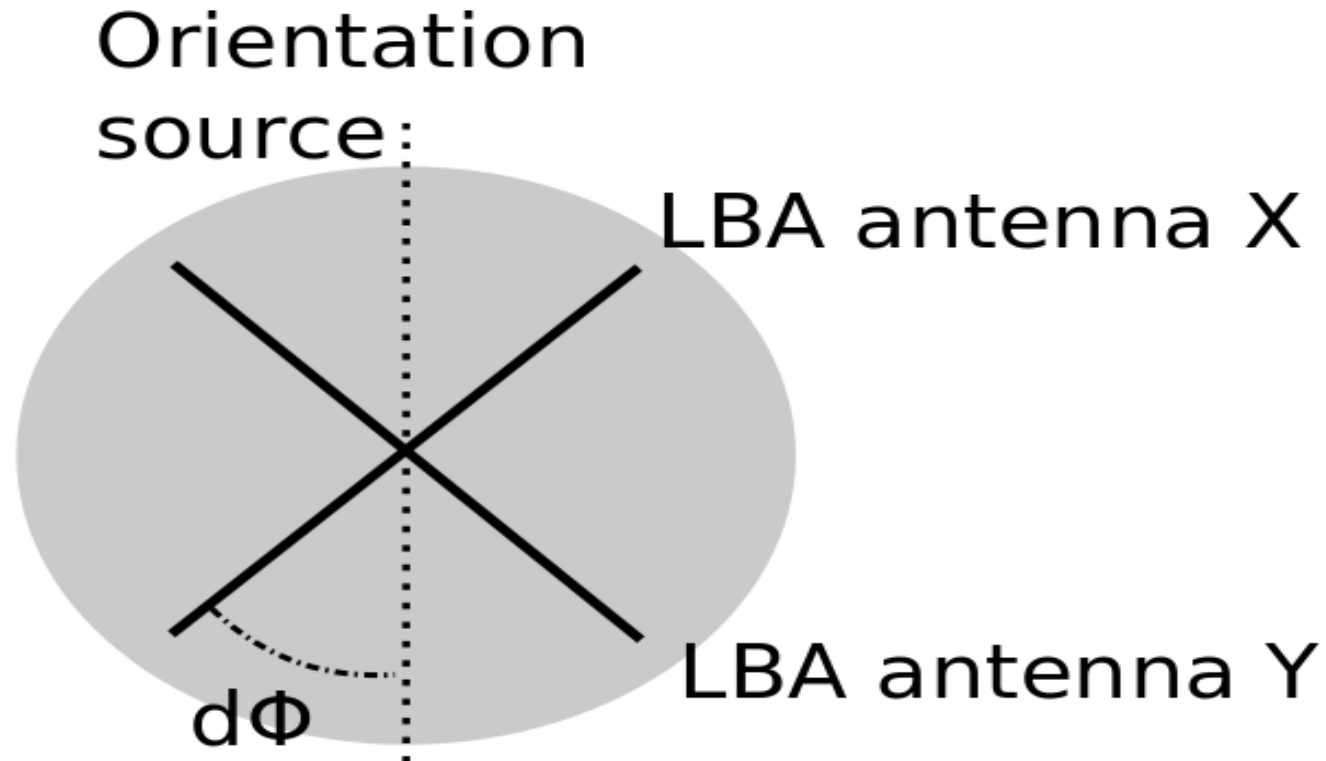
Validation of far-field ($r > 2 \frac{v D^2}{c}$)

Integrated averaged power

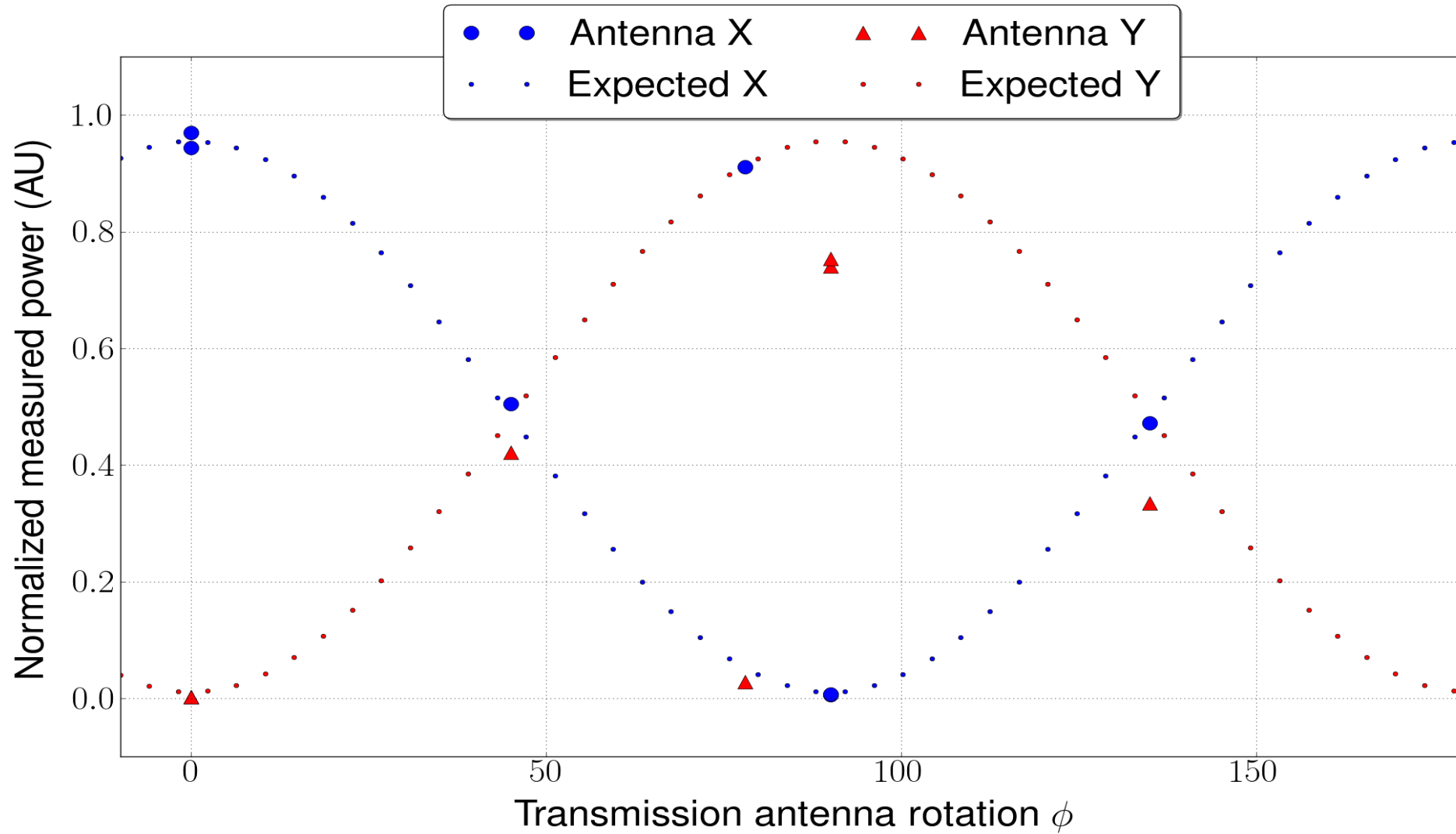


Validation of polarization (rotating antenna above LBA)

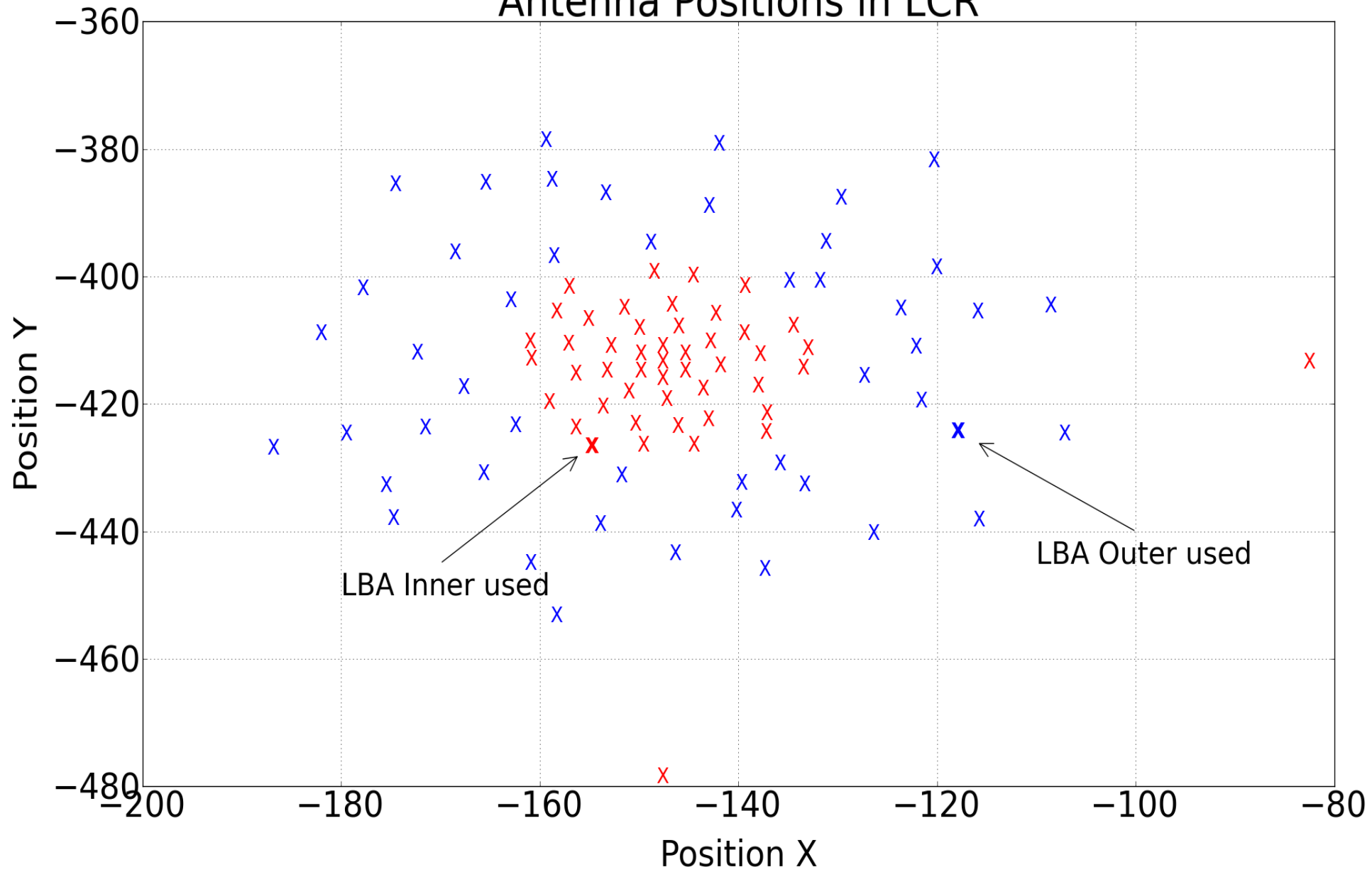
Top view



Validation of polarization (rotating antenna above LBA)



Antenna Positions in LCR



Conclusions

- Antenna model well known (earlier octocopter calibration)
- Cross-checks look fairly OK
- Expected result:
Antenna amplification factor for many different angles

Some back-up slides

Deviation from averaged power (in %), per measurement sample

