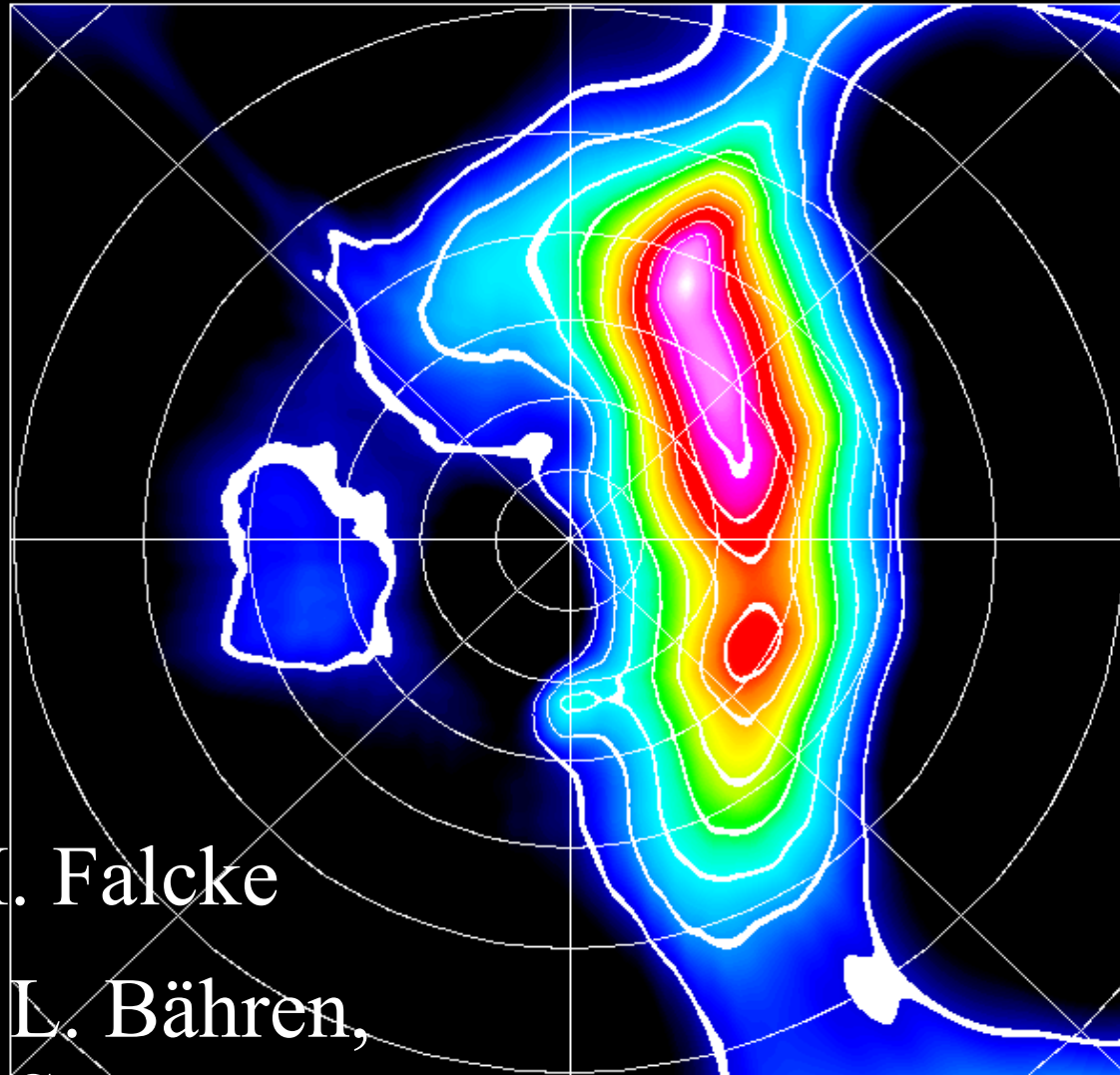


Sub-second all-sky-surveys

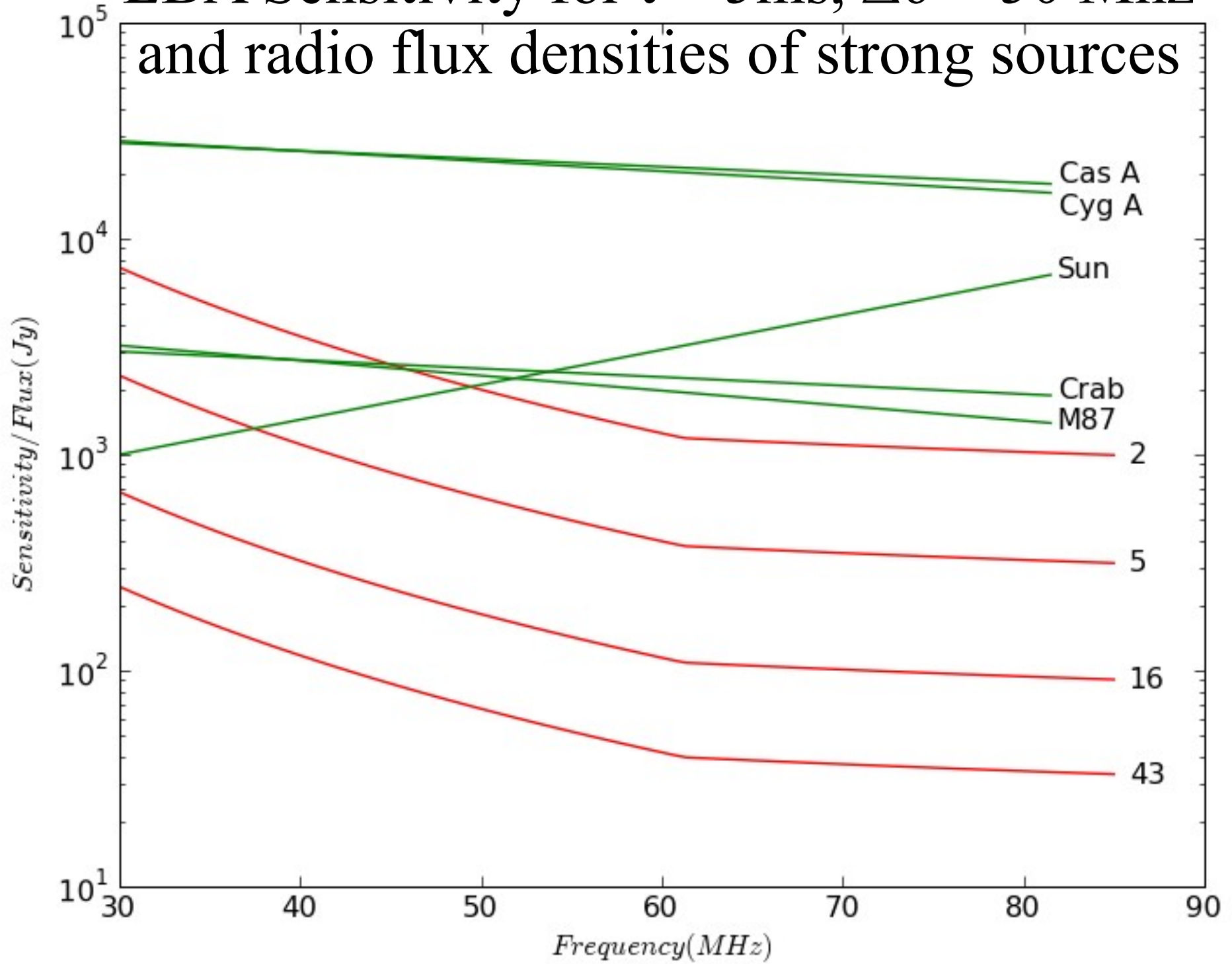


Sef Welles

Supervisor: H. Falcke

Contributors: L. Bähren,
A. Horneffer, S. ter Veen

LBA Sensitivity for $t = 5\text{ms}$, $\Delta\nu = 50\text{ MHz}$ and radio flux densities of strong sources



Observation parameters

- Observation 117 on 29-7-2009
- TBB stability test, PI: Sander ter Veen
- LB inner array of CS 302
- 2 useful full TBB dumps, at 11:38 and 12:20
- 42/43 antennas, both polarizations

Making all-sky-maps

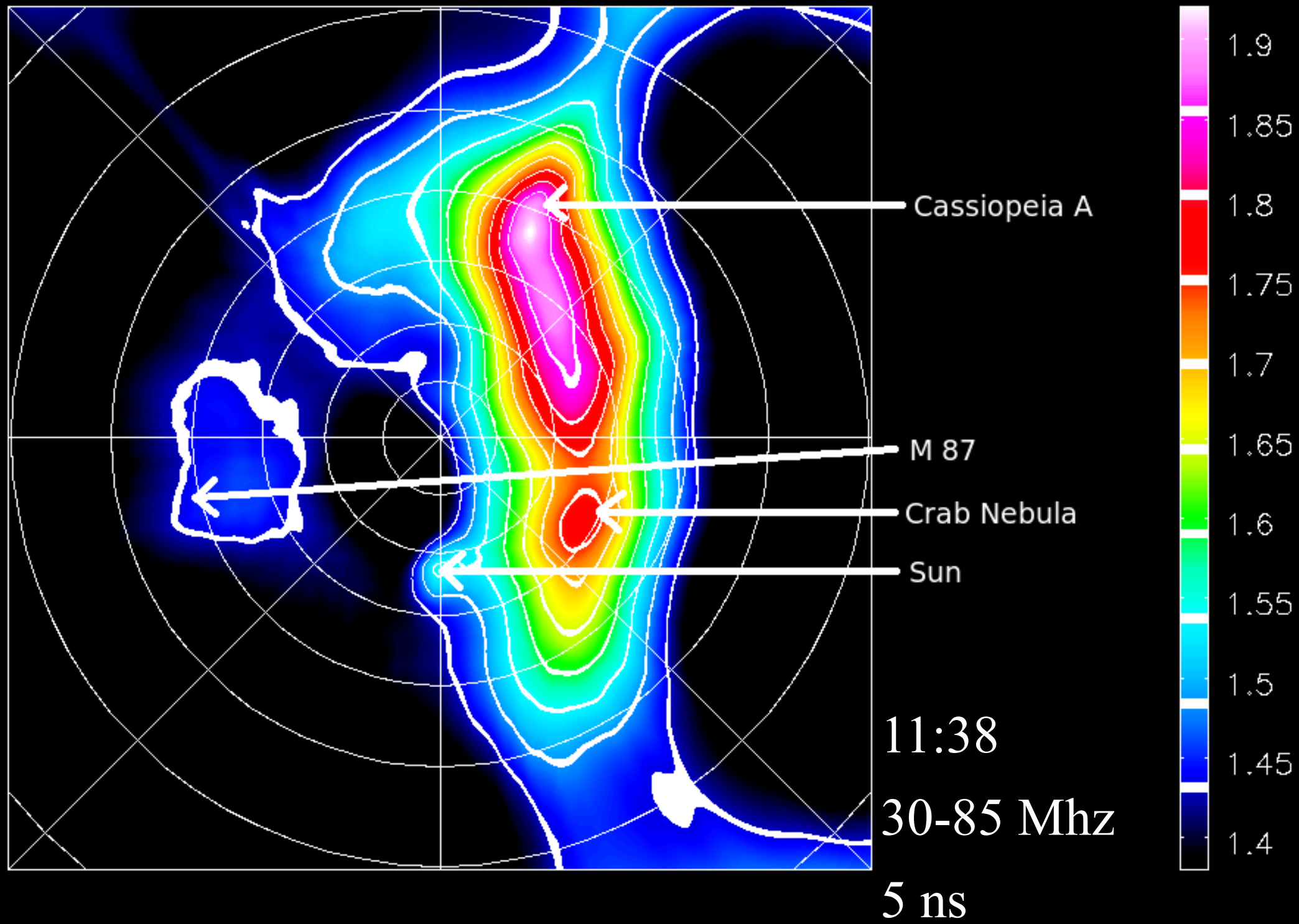
- Input data: TBB hdf5 files containing timeseries data in blocks of 1024 samples ($5 \mu\text{s}$)
- Set up a Skymapper object, containing:
 - coordinate system (AZEL, STG)
 - Antenna positions
- Calculate the time-offset between antennas and correct for this
- For each block, take the FFT and 'feed' it to the Skymapper
- Skymapper \rightarrow beamform \rightarrow all-sky-image

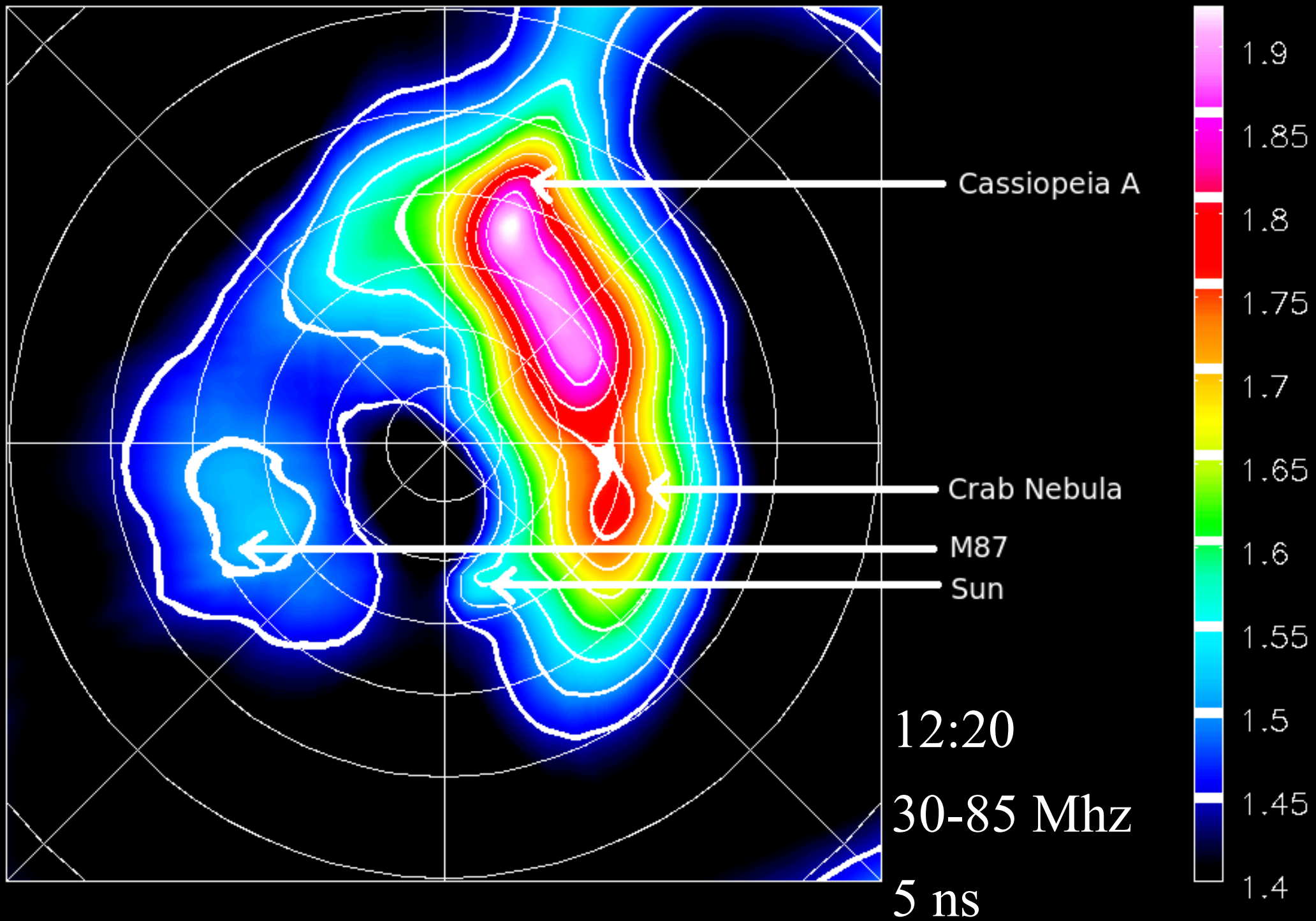
“Dirty” image

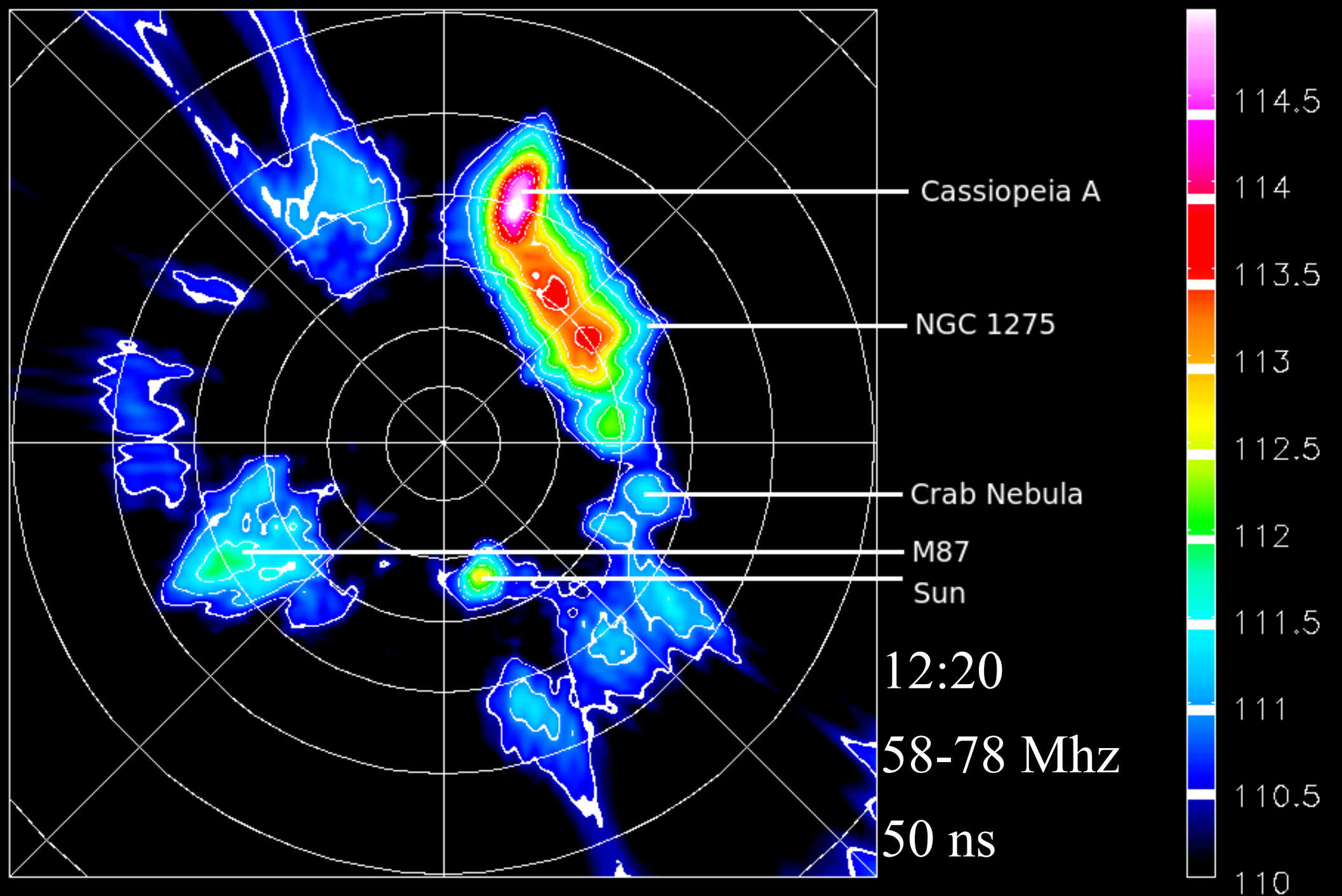
Making decent all-sky-maps

- Add the following steps:
 - Set a Hann filter before performing the FFT
 - Calculate the average amplitude for each frequency and antenna from the FFT
 - For each block, divide the FFT by the average amplitude before 'feeding' it to the Skymapper
 - Inspect the frequency data for RFI and remove it

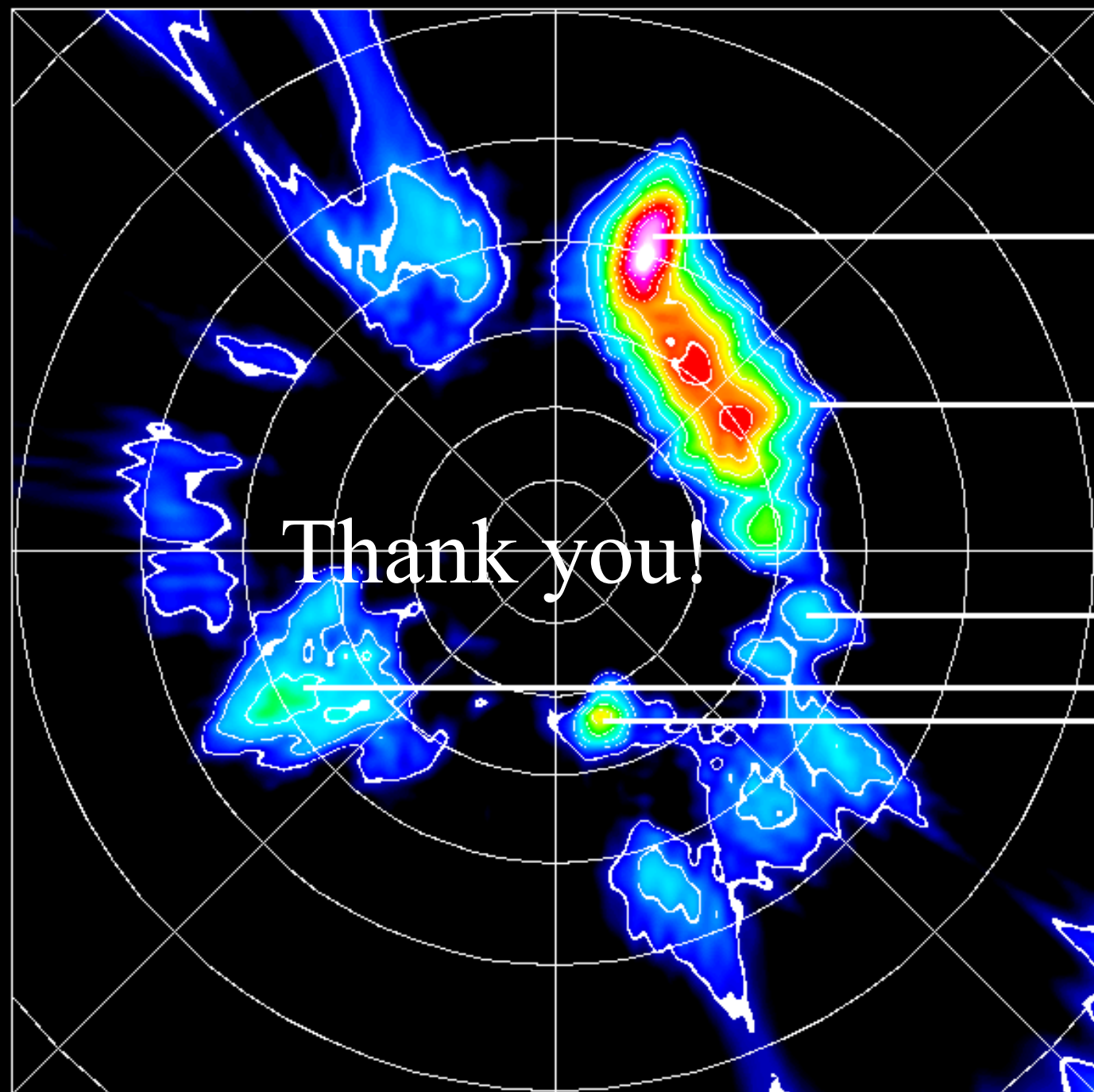
Power spectrum before and after calibration and filtering







only even ants



Cassiopeia A

NGC 1275

Crab Nebula

M87

Sun

Thank you!

