LBWG memo 18

Prefactor V3 changes

Leah Morabito, 2019.21.03

1 Prefactor V3 Changes – i.e. why we love TEC

There are a couple major changes to note since switching to a long baseline pipeline version that is compatible with prefactor V3. While there are a lot of little book-keeping and otherwise logistical changes, the main differences to keep in mind are:

- All calibration solutions are now stored in h5parms
- Pre-Facet-Calibrator is run with the international stations. This means the following:
  - Polarisation alignment is performed, and we therefore do not convert to circular anymore
  - Amplitudes (i.e., the flux scale) are calculated by prefactor
  - Clock values are calculated by prefactor

This means by the time we split out in-field calibrators, the only remaining effect to solve for should be the ionosphere (i.e., TEC), which can be different in the different directions. There are several ways to solve for this:

- Diagonal phase (or phase & amplitude) corrections
- NDPPP gaincal 'tec' mode
- NDPPP DDEcal 'tec' mode
- NDPPP DDEcal 'diagonal' mode
- AIPS FRING
- CASA fringefit

There are pros and cons to each of these. DDEcal is supposedly better but I found I get better solutions with gaincal 'tec'