DRAFT H4C RTP **Josh Dillon, 7/8/20** 4-pol Raw Diff Data 4-pol Raw Sum Data **A Priori Antenna Status Table** zen.{JD}.diff.uvh5 zen.{JD}.sum.uvh5 RTP Stage I **Extract Autocorrelations: Initial RFI Detection** extract_autos.py ???.py Extract autos and write to disk. **Run Antenna Metrics** ant_metrics_run.py Try to figure out dead/crossed **Raw 2-pol Autocorrelations** antennas. Run twice, once zen.{JD}.sum.autos.uvh5 with known good antennas **Initial RFI Flags** ??? Stored as some sort of **UVFlag object Data Down-Selection:** ???.py "Known Good" Antenna Metrics "Possibly Good" Antenna Metrics Perform down-selection for imaging zen.{JD}.sum.ant_metrics.hdf5 zen.{JD}.sum.ant_metrics.hdf5 pipeline and bispectrum/delay pipelines. This is probably two separate tasks. **Initial RFI** Inspect Notebook "Possibly Good" Used to look for **Data Inspect** times with major Notebook **Imaging Data for** RFI contamination Used for ongoing **Internet Transfer** graduating new ???.sum.uvh5 ???.diff.uvh5 antennas to "Calibration OK". "Known Good" **Data Inspect Bispectrum/Delay** Redcal: Notebook **Spectrum Data for** redcal_run.py Used for looking for **Internet Transfer** This is run twice for each file, once with antennas that died. ???.sum.uvh5 the known good antennas and once ???.diff.uvh5 with the possibly good ones. "Known Good" Antennas: "Possibly Good" Antennas: "Known Good" "Possibly Good" **FirstCal Calibration Solutions FirstCal Calibration Solutions Redcal Inspect Redcal Inspect Omnical Calibration Solutions Omnical Calibration Solutions** Notebook Notebook **Omnical Visibility Solutions Omnical Visibility Solutions** Used in combination Used for ongoing zen.{JD}.sum.first.calfits zen.{JD}.sum.first.calfits with the Data Inspect graduating new zen.{JD}.sum.omni.calfits zen.{JD}.sum.omni.calfits notebook to pick antennas to zen.{JD}.sum.omni_vis.uvh5 zen.{JD}.sum.omni_vis.uvh5 which antennas to "Calibration OK". calibrate and LST-bin **Nightly** Weekly **Observer** Commissioning Task Task **A Priori Antenna Status Table Conservative List of Bad** (Same as above) **Antennas (and Times???)** Update Weekly with new "Calibration OK" bad_ants/{JD}.txt Antennas. Also assign apparently broken Pushing this file triggers the antennas to digital or dish maintenance status. RTP Stage II **RTP Stage II** 4-pol Raw Sum Data zen.{JD}.sum.uvh5 (Same as above) Redcal: redcal_run.py **FirstCal Calibration Solutions** Run without any iterative removal of zen.{JD}.sum.first.calfits antennas. **Final Redcal Inspect** Notebook Checked to make **Omnical Calibration Solutions Omnical Visibility Solutions** sure data is OK zen.{JD}.sum.omni.calfits zen.{JD}.sum.omni_vis.uvh5 for LST binning Legend . Chunked Data with **External Origin Abscal: RIMEz Redundant Visibility** post_redcal_abscal_run.py Chunked **Simulation** Use RIMEz simulated visibilities to **Raw Visibility** ???.uvh5 calibrate redcal degeneracies. **Data Product** hera_cal process **Abscal Calibration Solutions** zen.{JD}.HH.abs.calfits Abscal Inspect **Calibration Data** Notebook Chunked **Product** See how abscal is doing and which LSTs and frequencies its **XRFI** hera_qm process failing at. Examined xrfi_run.py before LST-binning Find and flag RFI based on raw data, Omnical gains and chi^2. Omnical visibility solutions, and Abscal gains. Condenses **Metrics Data** flags to a single waterfall. **Product** casa_imaging process **Per-File Flagging Metadata** zen.{JD}.xrfi/*zen.{JD}.*.h5 **CASA Imaging** Intermediate data products from **Data Product** XRFI (flags and metrics) **Jupyter** Notebook (one per night) **XRFI Day-Long Thresholding** xrfi_run.py All other XRFI flags/metrics Flag entire integrations or entire from the same day. channels based on RFI statistics over a **Analogous Data or** whole day. Apply all flags to calibration. **Calibration from Other Times** Unfinished Module or Notebook **XRFI Thresholding Metadata Initial RFI Flags** zen.{int(JD)}.*_threshold_flags.h5 Flagged Absolute ??? Intermediate results from day-long **Calibration Solutions** (Same as above) XRFI thresholding zen.{JD}.HH.flagged_abs.calfits **XRFI** Inspect Notebook See how well XRFI worked. Examined before LST-binning. **Smoothcal:** smooth_cal_run.py All other absolute calibration Smooth calibration solutions on a solutions for the same day. desired calibration and frequency scale. Also selects a reference antenna. **Smoothed Absolute** smooth_cal **Calibration Solutions** Inspect Notebook zen.{JD}.HH.smooth_abs.calfits See how well smooth_cal worked. Examined before LST-binning. **TO FIGURE OUT: Reflection Fitting Noise Estimation Update Omnical Visibility Solutions** Clean Up / Librarian **Delay Filter Fringe Rate Filter Imagine** Movie **LST BINNING**