EVLA Memo #228

VLA 4-band beam width measurement using the holography observing mode

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The purpose of this memo is to describe measurements of the beam width of the VLA 4m-band system using the holography observing tool. The holography technique involves using the cross-correlation between two antennas with custom design of tracking and pointing for subsets of antennas within the array. The details of the technique are comprehensively explained in Dr. Rick Perley's EVLA Memo #212. This technique is used as a basis for the development of the software observation tool called holography mode in the VLA suites of observing tools, which will be potentially also carried to ngVLA. In a nutshell, the holography mode of observing allows one to modify the observing such that, one can select one or more antennas to track a bright source, and the rest of the antennas to scan a wider range of angles across the source in horizontal and vertical directions (equivalently in azimuth and elevation).

The VLA's 4m-band spans 50-86 MHz but it is most sensitive in the 70-78 MHz band (read more about 4m band here[1]). The VLA at these frequencies however suffers from self-generated RFI that will potentially require installation of additional line filters to resolve. The self-generated RFI is especially strong in the C and D configurations where antennas are generally closer together than B and A configurations. One of the causes of this is broad-band RFI from the electronics of the neighboring antennas being picked up, especially at low elevations when reflections off the ground are being picked up by the dipole. Primarily due to this lingering issue, the 4m-band is not well used and needs more validation and testing of the system performance. In this memo an attempt is made to measure the beams in both X and Y polarization (or equivalently horizontal and vertical polarizations. Note that X and Y are used in this memo for brevity).

The antennas that just track the source are referred to as (in this memo and the previous ones) "reference antennas" and the antennas rastering across azimuth and elevation are referred to as "target antennas". One would expect to see the beam structure in the correlation results between a pair of antennas, only one of which is slewing and the other is tracking the source.

[1] https://leo.phys.unm.edu/~lwa/users19/presentations/Schinzel_ELWA.pdf

The holographic measurement was designed to measure the surface quality at KAQ bands, and can also be used to obtain beam cuts. The holographic scan mode in the VLA observation preparation tool (OPT) allows the user to choose antennas that are the reference and those that are slewing across the source. In a usual holographic observation, the slewing antennas perform observations in a raster while keeping a bright source at the center of this raster, which results essentially in cuts across the primary beam of the slewing antenna. Typically, the source is centered, and the amplitude of the movement is the same in both directions. But that is not mandatory. The number of points and rows is a user's input.

In this work, we use the holographic mode to perform beam cuts. For that, we set two different scans: the first changing elevation in a fixed azimuth, i.e., selecting one row only in the holographic scan setup. In the second scan, we inverted and changed the azimuth for a fixed elevation. In the OPT, the only possible holographic mode to set is the stepping holographic, meaning that the user needs to define the number of points in each row. However, in the end, as we will explain below, we have used a new 'on-the-fly' mode, where the antennas are continuously observed during the movement. This mode is being developed in anticipation of testing the ngVLA prototype antenna. In that case, the users must set how many beams need to be slewed (as a factor of λ/D), the antenna speed, and the number of rows in each scan. An advantage of using this mode of observation is that it allows diagonal cuts, which lets us avoid eventual sub-reflector reflection and diffraction from reflections of the antenna support legs.

I. How was the data recorded?

We collected a series of data in Feb 2023 and in May 2023. With the initial testing, we ran into issues with the executor that controls the VLA, which ignores the 4m-band and considers it as a P-band observation. This particularly produces inaccurate scans, since the antenna movement is scaled with the beam size (which is different for P-band compared to the 4m-band). This issue was appropriately solved by rescaling the beam to 4m-band. To do this, we set the observation band to P-band, but set the frequency tuning to 4m band. This is possible due to the combination of the 4m-band and P-band receiver outputs onto a single 1 GHz VLA baseband. Further, we also tested the most recent on the fly (OTF) mode of observing, which records the data as the antenna is slewing (instead of stopping slew during data recording). In this observing set-up, we set the value of antenna movement rate manually (thanks to calculations offered by Ryan Berthold!). We see the better results in the OTF mode and thus here we show the results of beam width measurements using the OTF observations in this memo.

The initial set of data was recorded on Feb 16, 2023 in B-configuration, and the file can be accessed from the NRAO data archive (to download a copy, go to data.nrao.edu and search for `TSUB0001_sb43644827_1_1_004.59991.8903250463`), while the second set of data were recorded on May 31, 2023 in BnA configuration. (file can be accessed from data archive by searching for `TSUB0001.sb44031665.eb44032417.60095.564519374995`). Both observations were recorded in the "holoraster" mode – meaning 13 dishes are tracking the source Cyg-A and the other 14 dishes are slewing +/-20 deg around the source in two transects, one in azimuth and another in elevation. This combination should allow us to sample the ~40 deg primary beam structure. The OTF data were recorded on Jun 2, 2023 and can be accessed by searching for `otf_holo_3c84_cross_ms.4p.60097.59436407407`.

To implement the holography mode in the observing portal, the selection for which antennas would slew and which don't was made manually keeping the numbers on each arm (N, E, W) fairly equal. The holography module expects as an input the step resolution of the raster pattern. To determine the step size, we calculate the resolution of the primary beam determined by λ/D. For the 4m band, λ=4m and D=25m (diameter of dish), giving us a primary beam size of 9.1 deg (read more about VLA configurations and resolutions here[2]). For this observation, the number of sampling points across this beam size was set to 52, yielding a step resolution of 9.1/52=0.175 deg. The first scan had half the antennas tracking Cyg-A and the other half stepped through elevations centered around Cyg-A. The second scan had half the antennas tracking the source while the other half stepped through azimuth centered around Cyg-A.

II. First look of data and Initial analysis:

Figure 1 shows the antenna positions plotted using the `plotants()` task in CASA. Note that VLA is in B (in Feb, 2023)/BnA (in May 2023) configuration at the time of observation.

[2] https://science.nrao.edu/facilities/vla/docs/manuals/oss/performance/resolution

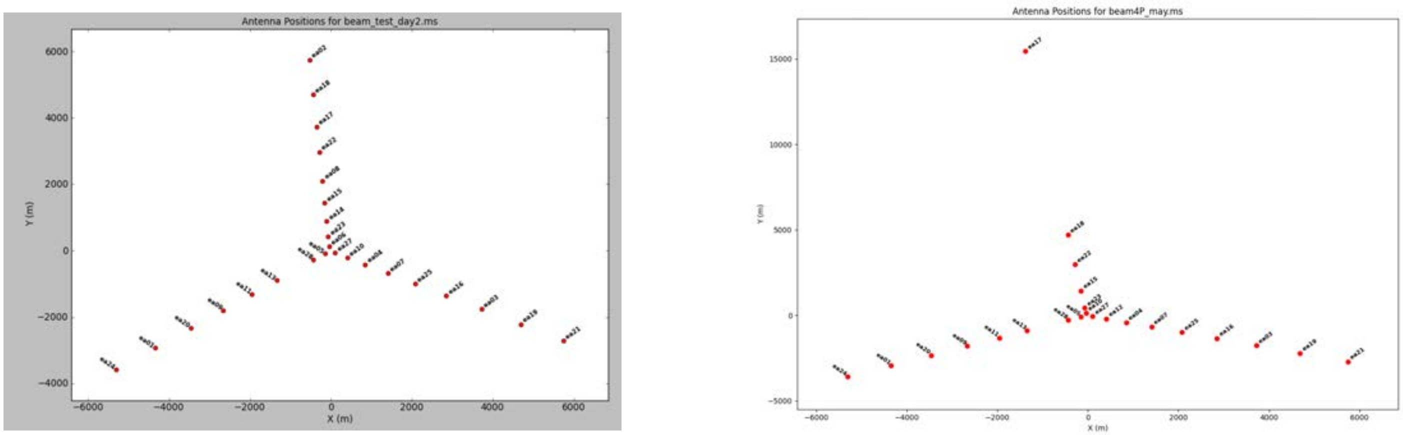


Figure 1: Antenna positions on Feb 16, 2023 (B configuration), and May 31, 2023 (BnA configuration).

Table 1 gives information about antennas and their slewing vs reference selections.

VLA Arm	Slew (~20 deg on either side of Cyg A)	Reference (tracking Cyg A)
W	ea28, ea11, ea20, ea24	ea05, ea26, ea13, ea09, ea01
N	ea06, ea14, ea08, ea17, ea02	ea23, ea15, ea22, ea18
E	ea27, ea04, ea25, ea03, ea21	ea10, ea07, ea16, ea19

Table 1: Manually selected reference and slewing antennas in each arm

We used `importasdm()` to convert the asdm files to ms files. The rest of the analysis is roughly based on the [P-band tutorial](https://casaguides.nrao.edu/index.php?title=VLA_Radio_galaxy_3C_129:_P-band_continuum_tutorial-CASA6.2.0)[3]. Any deviations will be noted. Figure 2 shows an example of the RFI free bandpass feature in this observing mode, making it clear that the sensitivity of the 70-78 MHz spectral window is higher than the neighboring bands.

[3] https://casaguides.nrao.edu/index.php?title=VLA_Radio_galaxy_3C_129:_P-band_continuum_tutorial-CASA6.2.0

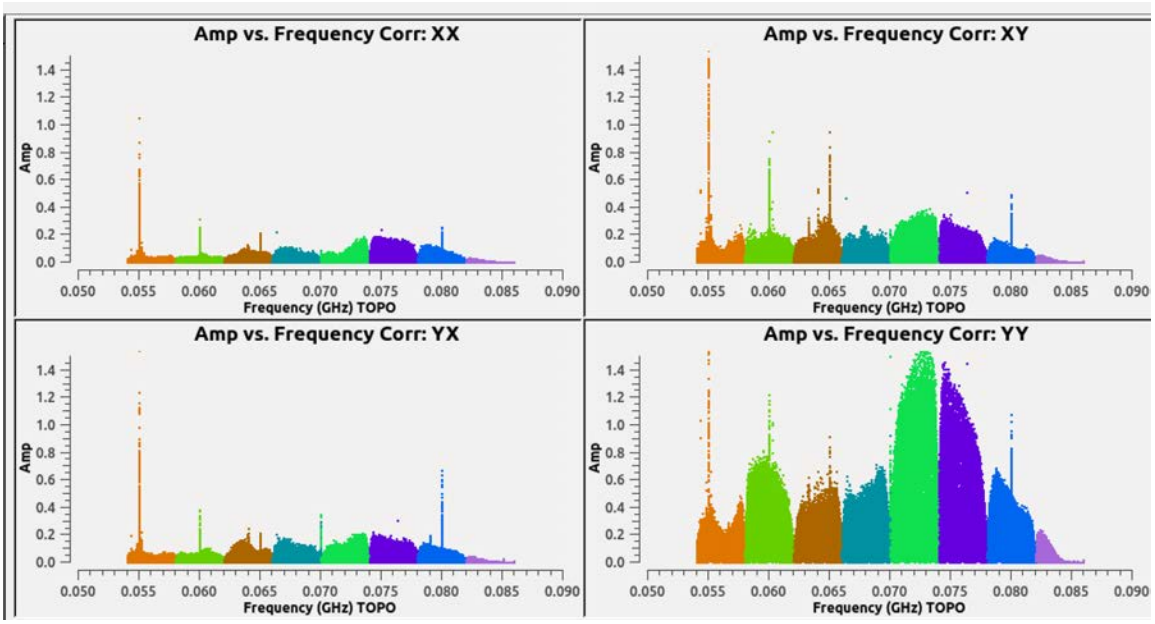


Figure 2: Bandpass structures of the VLA 4m band. Each spectral window that is ~4MHz wide is plotted with a different color.

The next step in the analysis is calibrating the data. We first reset the requantizer gain for each spectral window. This is done to ensure consistent output levels between each spectral window. We then follow the three step calibration process: gain, delay and bandpass, with similar settings as described in the P-band tutorial and using ea05 as a reference antenna. Applying these calibration solutions and inspecting the correlations for ea05 shows an improvement in output levels and bandpass structure compared to pre-calibrated data.

Using `tclean` to image the data (a short test observation recorded before the holography scans), assuming Cyg-A to be a point source provides a good image at ~76 MHz (Fig. 3).

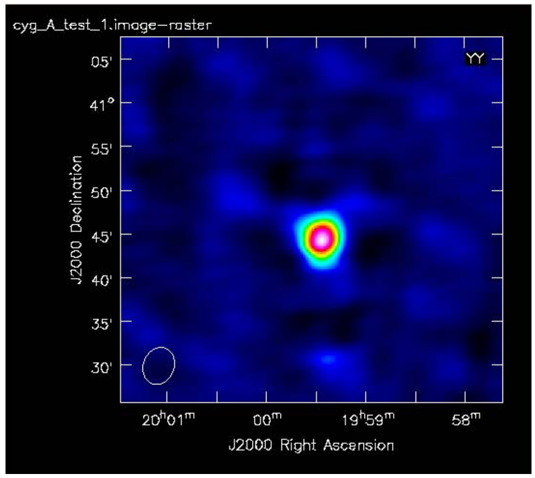


Figure 3: Cyg-A imaged at 76 MHz as a point source.

III. Beam width measurement with holography mode of observation

For beam width measurement, we used `casacore` to extract the pointing information that's recoded at a cadence of ~0.1 s and the corresponding cross-correlation products at an integration time of 2 s. In order to match the pointing information with the data, I picked the nearest time stamp in the `POINTING` table corresponding to the data. Plotting the cross-correlation product as a function of azimuth or elevation will give beam width in corresponding to the pointing direction.

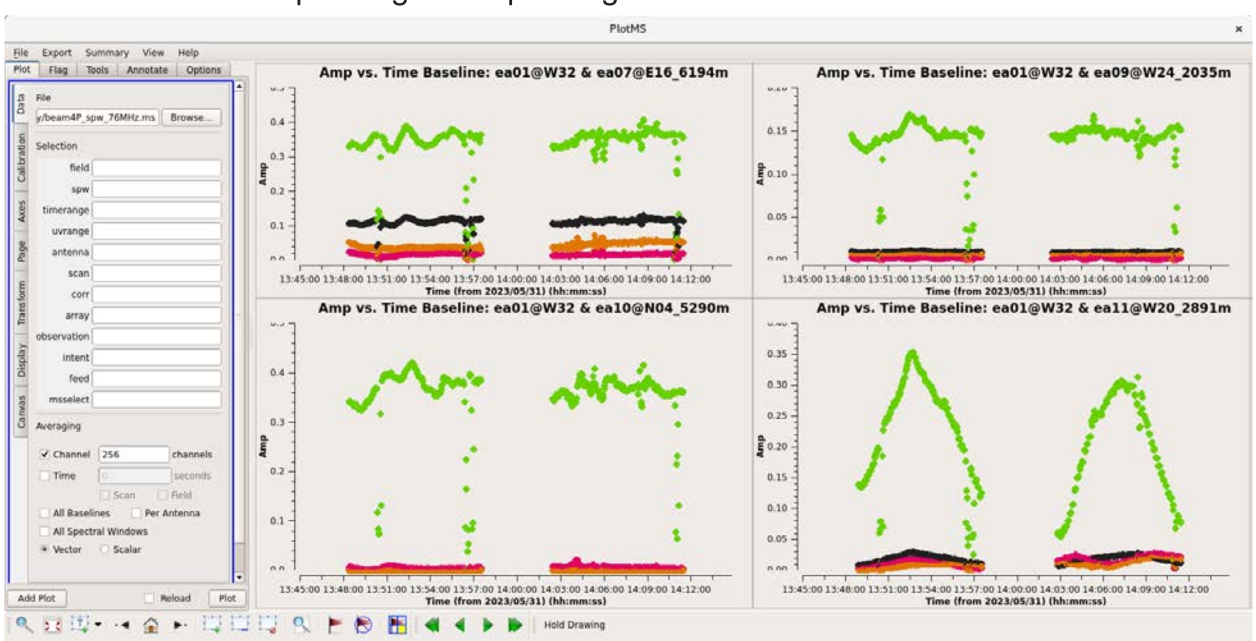


Figure 4: Examples of amplitude of the cross-correlations measured – time corresponds to the raster position in each scan, with the first scan for elevation and the

second for azimuth. Four different baselines, green showing the YY, black is XX, orange and pink are cross-polarizations. The elevation scan for the baseline ea01-ea11 shows a pointy beam structure while the azimuth scan is as expected.

Investigating each of the baselines brings out some significant observations:

1. The elevation scan for all the baselines is typically strongly peaked with roughly linear fall-off away from the center of the beam.

2. The elevation scan for some of baselines has a secondary peak on one or both sides of the actual peak.

3. Some of the baselines show higher amplitude values for the XY and YX cross-correlations compared to XX and YY cross-correlations – suggesting a connection flip in the feed.

4. The Y polarization shows higher amplitude values likely due to different gains/gain settings compared to the X polarization.

5. Some baselines don't show any beam structures suggesting issues with individual antennas that need further investigation.

The individual baselines with issues are not listed here, but are fairly easy to identify from the measurement set file using the `plotms()` task, iterating through baselines and colorizing by correlations. Alternatively, see the attached Appendix for the beam cuts of all the baselines with normalized amplitudes. Of particular interest, ea28 shows cable reflections, ea20 shows strong RFI at 80 MHz, ea19 has a flat X polarization response.

For an initial measurement of FWHM of the beam, we are conservatively selecting a baseline that shows a reasonable beam structure, ea01 (reference) - ea11 (target) as shown in Figure 5. The amplitude values are obtained directly from the correlator, with 256 channels averaged for the spectral window of 74-78 MHz, and the pointing information is obtained from the `POINTING` table. The correlator output has an integration time of 2s, while the `ENCODER` information from the `POINTING` table is sampled at roughly 0.13s. To extract the pointing information at the 2s integration time stamps, we search for the closest time sample in the `POINTING` table that corresponds to the amplitude time stamp and use that azimuth and elevation information. This results in a maximum time error of a single time bin in the `POINTING` table (0.13s) relative to the center bin value of the 2s integration time. This enables visualization of the beam as a function of spatial coordinates. Further, the amplitude values of the Y polarization are maximum normalized. These values show the FWHM of the Y pol is 16.14 deg in elevation and 16.96 deg in azimuth. Y polarization is also on average ~13 times stronger than X polarization in the elevation scan and ~11.2 times stronger in the azimuth scan. Normalizing X polarization (dividing by 0.08) values to bring it to a comparable scale to Y polarization shows a similar beam structure with comparable FWHM.

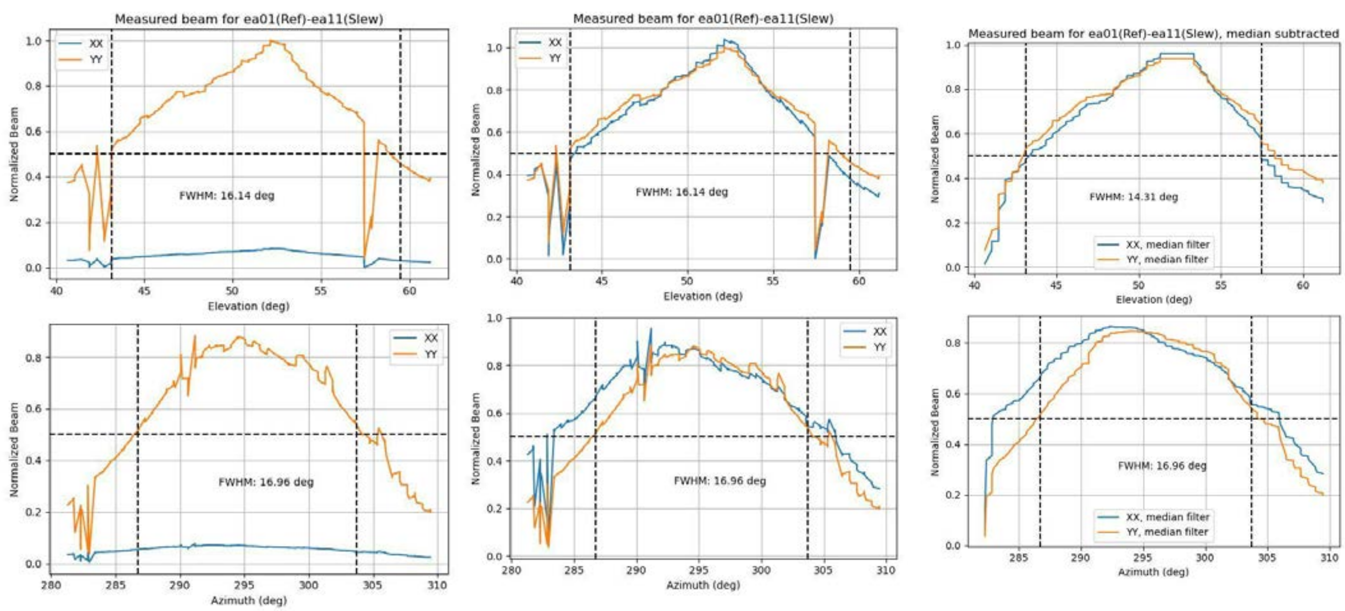


Figure 5: Measured beam structure in elevation and azimuth. Left plot shows the beam normalized by maximum Y pol values. The middle plot shows an extra 0.08 normalization factor applied to X pol to bring to the same scale as Y. The right plot shows the beam structure after applying a median filter that spans 35 AZ/EL bins (corresponding to 5 deg.) – this removes the spikes due to RFI and also reduces the FWHM of the elevation scan by roughly ~2 deg.

This beam is wider than expected from the simulations (see, Mahmud Harun PhD thesis[4]), ~6 deg. and this measurement also shows that the **Y polarization beam is roughly 11-13 times stronger compared to the X polarization, that does not scale the noise levels – thus possibly indicating a different gain settings for each of the two polarizations.** This is higher than the expected 50% mismatch (refer Frazer Owen's EVLA Memo #190). The 256 channel averaged beam shows some RFI-like

[4] https://vtechworks.lib.vt.edu/handle/10919/29455

structure at the beginning and ending of the scan, which can be clearly seen in the waterfall diagram shown in Figure 6. These RFI can be cleaned using median filtering. A preliminary test after applying the filtering does smooth out the structures. This does not change the overall beam shape but changes the FWHM by ~2 deg.

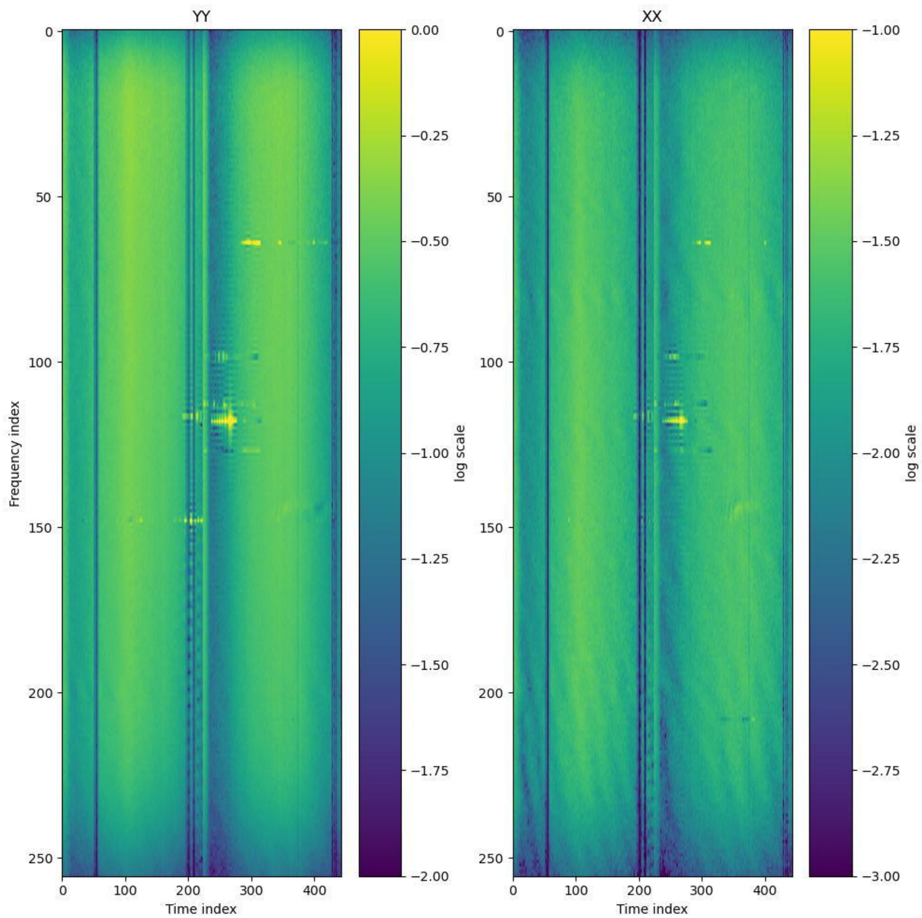


Figure 6: Waterfall of the XX and YY polarization of ea01-ea11 baseline that shows some RFI in the elevation scan. Fringes are also evident in the X pol amplitudes.

IV. OTF Scans at 45 deg off the J poles:

One of the contending reasons for the strong peaks and linear fall-off of the beam cuts is the excess diffraction caused along the J poles and coupling with the sub-reflector support legs. The reason for this is not well known but is speculated to be due to 4m-band poles being offset from the rest of the feeds by 45 deg. spanning between the support legs. To test this, we used the OTF observing mode, and set up observations for similar beam cuts as holography mode, but offset by 45 deg. (essentially × instead of +). Pointing information is not stored as a `POINTING` table as in holoraster scans, but can be calculated using the slew rate. The observation was set to complete a beam width of λ/D at 74 MHz in 200 s, resulting in a slew rate of 0.046 deg/s [(λ/D)/200, D= 25 m, λ = c/f , f = 74 MHz]. Using this and the time stamps in the cross-correlation product, we can calculate the angle of the scan relative to the first time stamp. The amplitude plotted against the time of observation is shown in Figure 7 and the corresponding waterfall with frequency axis is plotted as a function of slew angles is shown in Figure 8 (measured with the starting point as a reference, note that the second scan is 45 deg off of first scan but the x-axis of Figure 8 does not indicate that, instead shows the continuous slew angle. This was chosen only for the ease of plotting the waterfall).

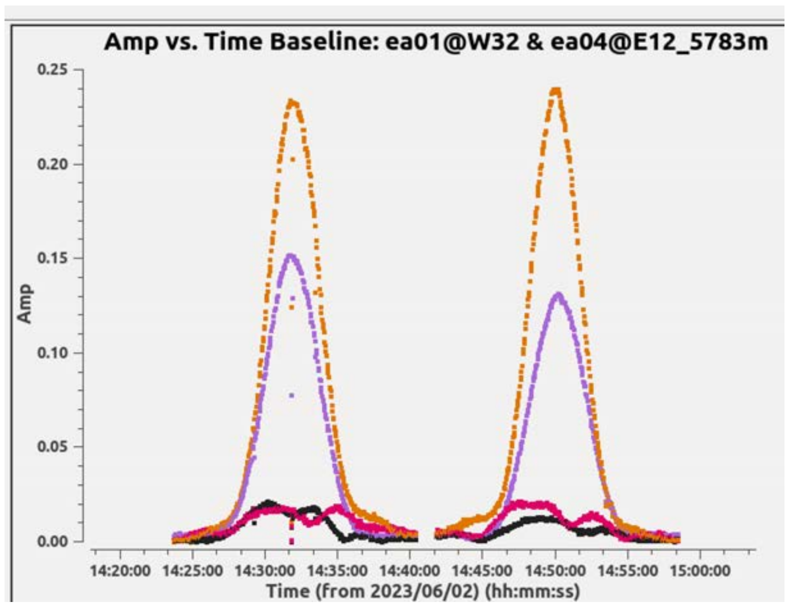


Figure 7: An example of the amplitude of the cross-correlations measured for the baseline ea01 and ea04 – time corresponds to the raster position in each scan, with the first scan for elevation and the second for azimuth. Four different cross-correlation products are shown, orange -YY, purple- XX, black and pink XY and YX respectively.

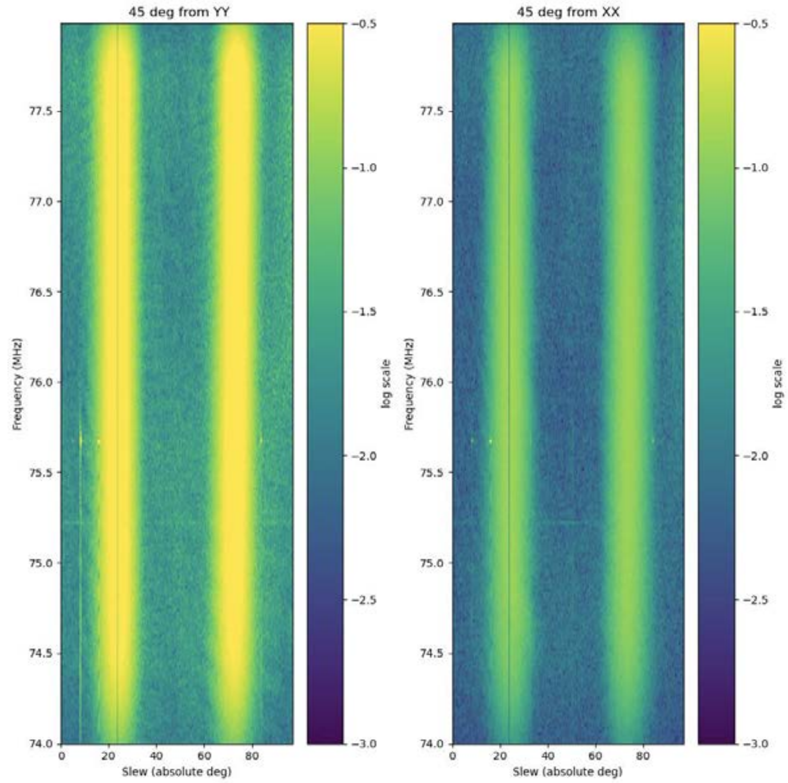


Figure 8: Waterfall of the XX and YY polarization of ea01-ea11 baseline. Fringes are also evident in the Y pol amplitudes.

For beam width measurement, a similar normalization analysis was performed as described in the holoraster mode of observation, and FWHM was calculated. These calculations were done for the baseline with antennas ea01 and ea04, and are indicative of a similar pair of ref and slew antenna, as shown in Figure 9. We find that FWHM for the 45 deg. off the azimuth axis is measured to be 10.78 deg and 11.06 deg for 45 deg. off the elevation axis. These are closer to the expected 6 deg. from simulations than those measured along the azimuth and elevation. (see, Mahmud Harun PhD thesis for the simulations). We also find that Y polarization is about 35-50% stronger than the X polarization – closer to what's expected compared to order of magnitude as seen in the haloraster method of beam cuts.

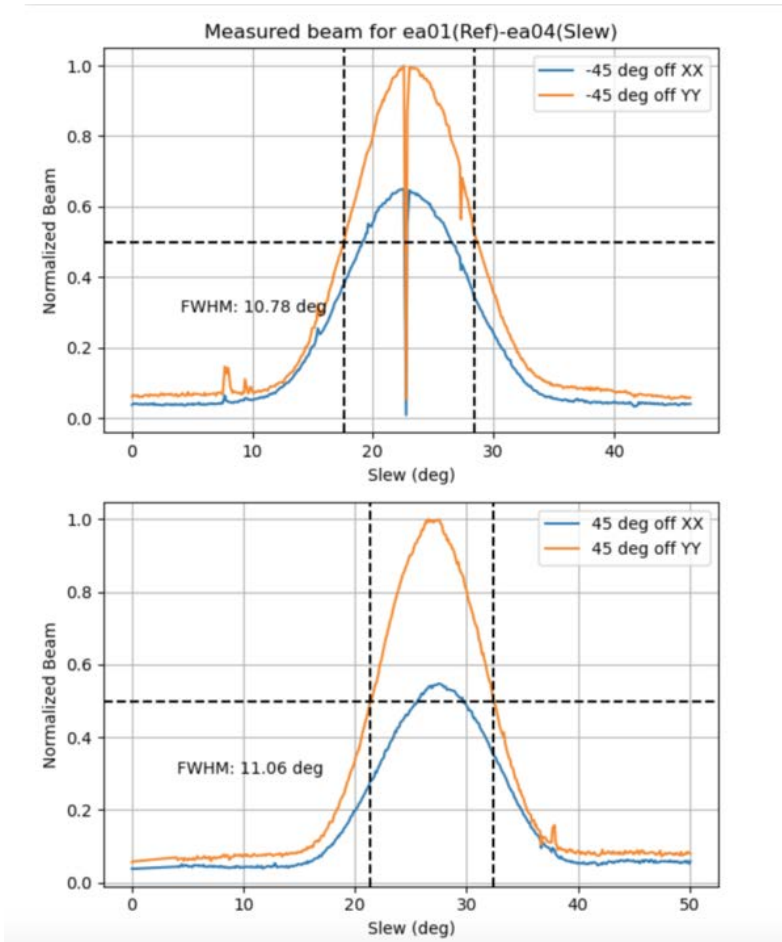
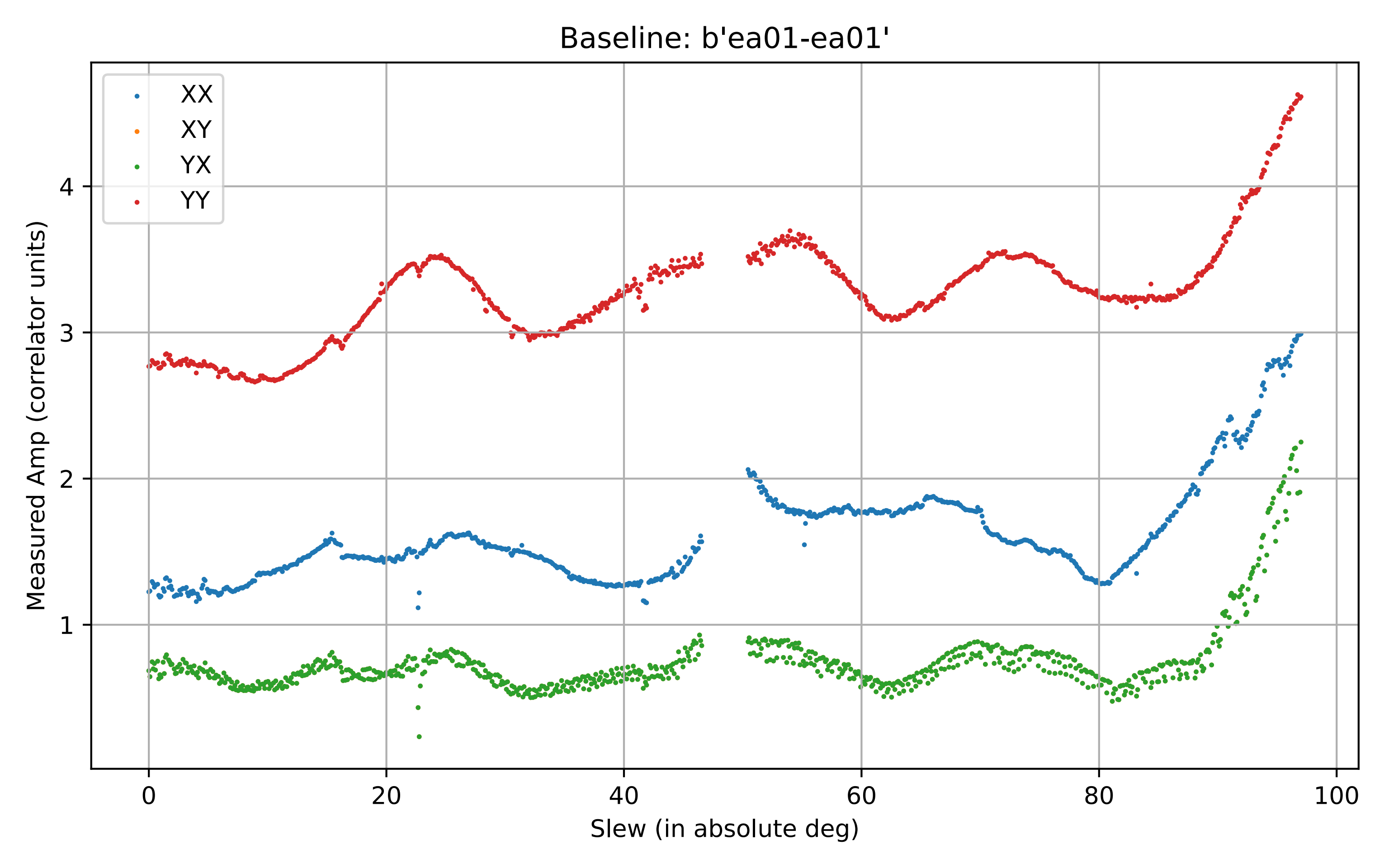


Figure 9: Measured beam cuts in the OTF mode of observation. (Top): Scans 45 deg. off the azimuth axis shows the FWHM in Y pol to be 10.78 deg, and (Bottom): scans 45 deg. off the elevation axis shows FWHM in Y pol to be 11.06 deg. Y pol is generally about 35-50% stronger than the X-pol.

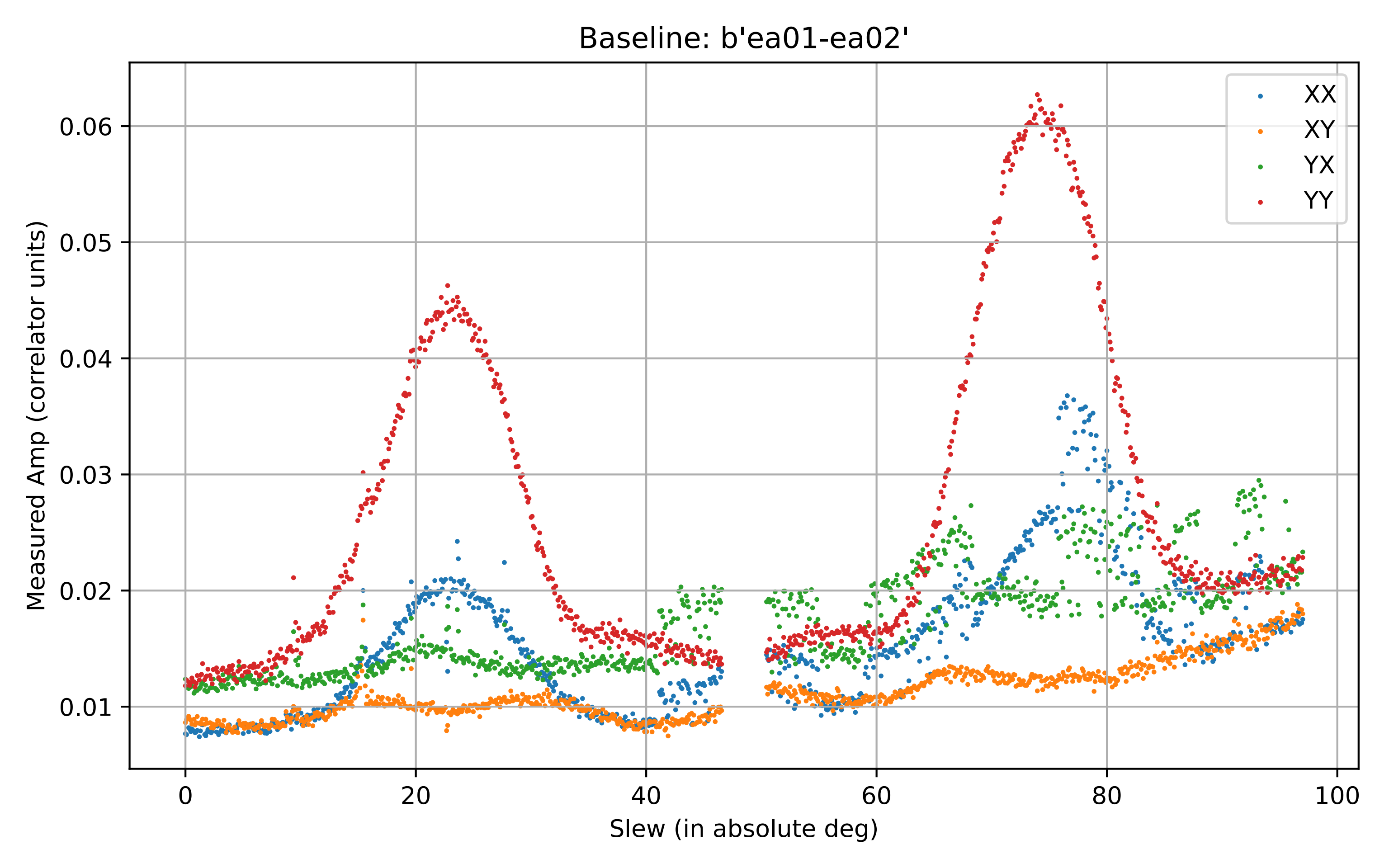
Conclusion:

In this memo, we used the holography observing technique, both as a 'stop-and-record' and 'on-the-fly' mode, designed for the VLA system to measure the beam of the 4m-band in the spectral window of 74-78 MHz. The technique shows promising potential to measure the beam, however most shortcomings noted in this test were specific to the 4m-band system that was designed as an adhoc to the existing VLA antennas. For tests along the azimuth and elevation axis, most baselines showed peculiar pointy and/or double peaked structures that could be due to a plethora of systematics, including but not limited to, diffraction and scattering effects of the dish for a feed that is not at the prime focus, a transiting bright source within the beam such as Cas-A (although we suspect this to also show up in the azimuth scan but does not), sporadic E/ionospheric effects. A test repeating this same observation can help narrow down these causes. Most contending reasons for the unexpected beam shape is sub-reflector reflections, which is made evident in the diagonal beam cuts that are 45 deg. offset from the azimuth and elevation axis. Further, on an average Y polarization was seen to be 11-13 times stronger than the X polarization against the expected 40% mismatch. Overall, for the baseline of ea01-ea11, both the polarizations measure the FWHM of the beam to be ~14 deg. in elevation and ~17 deg. in azimuth.

Interestingly, for scans that are 45 deg off the azimuth or elevation axis show cleaner beam cuts (except for the sudden drop in cross-correlation product at beam center). At this 45 deg. offset, the beam width is ~11 deg. and Y-pol is generally 35-50% stronger than the X-pol. Potential future work on this project will be to 2D map the beam by performing the set of scans starting at 45 deg. off azimuth and elevation and slowly decreasing the offset by 5 deg. in each scan. This could lead to an overall picture of the 4m-band beam and spatially mapping the range where the beam behaves as expected and the boundaries where the systematics overpower the beam structure.



Baseline: b'ea01-ea01'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
1
2
3
4
0
20
40
60
80
100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XX
XY
YX
YY
Measured Amp (correlator units)
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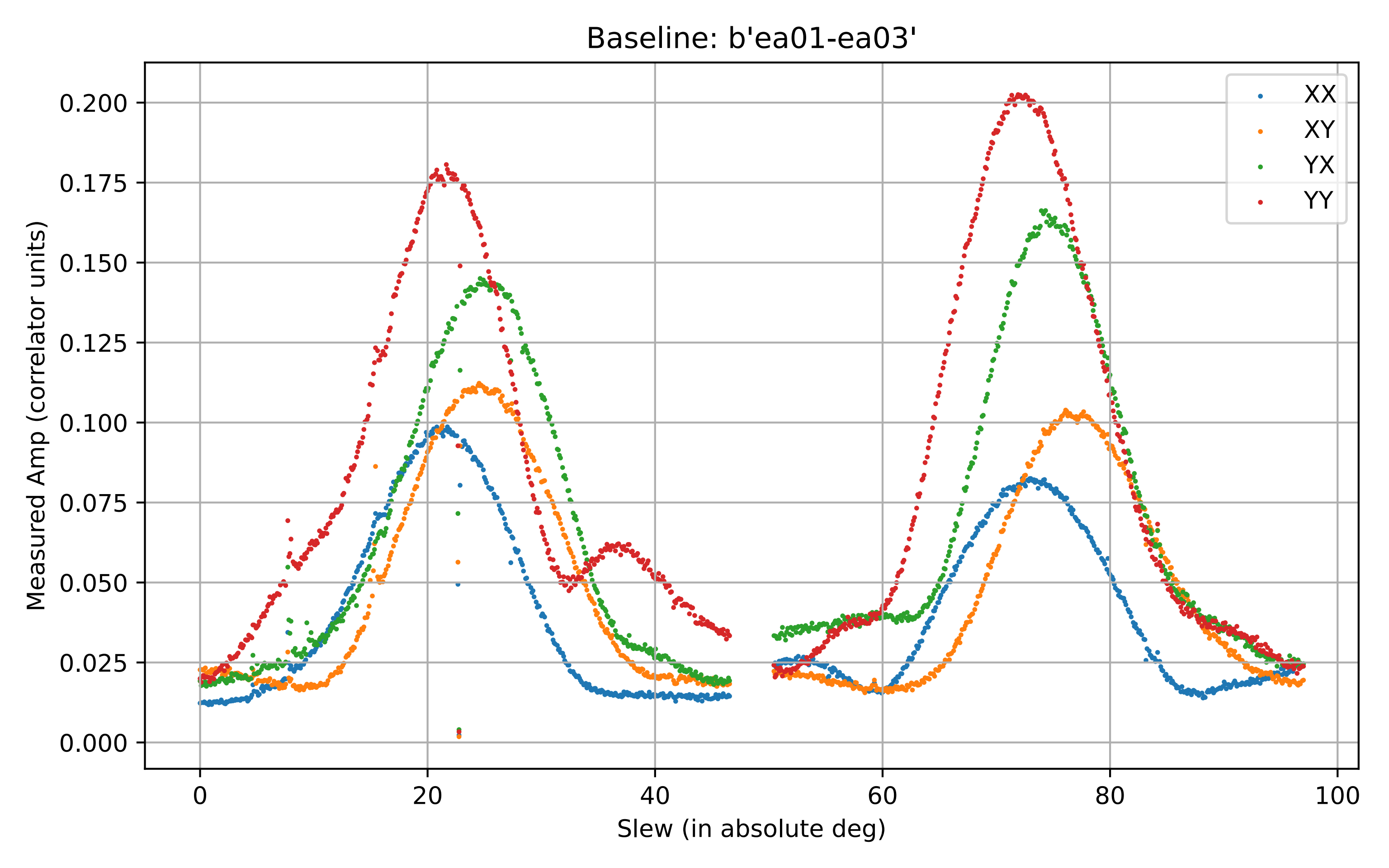
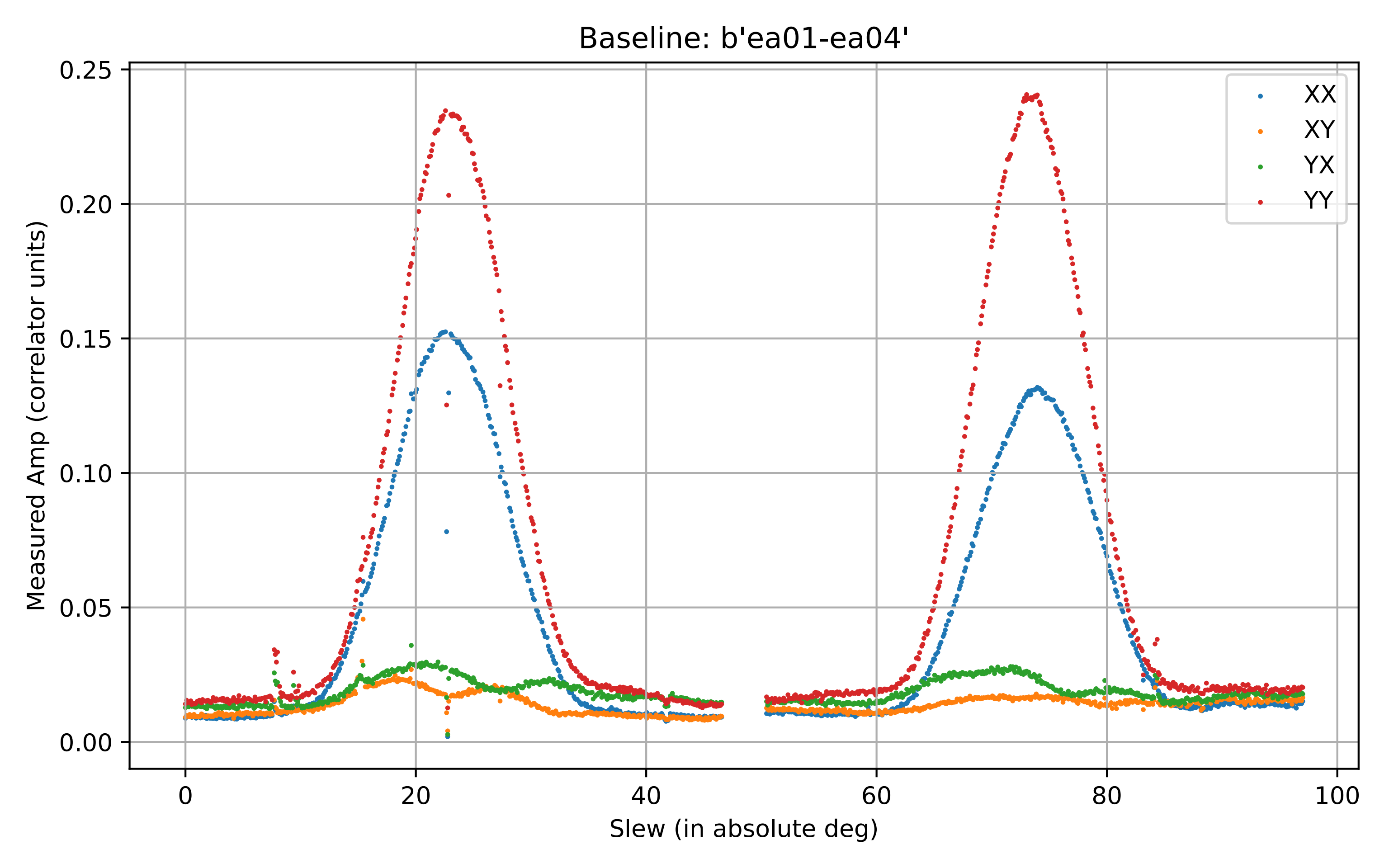
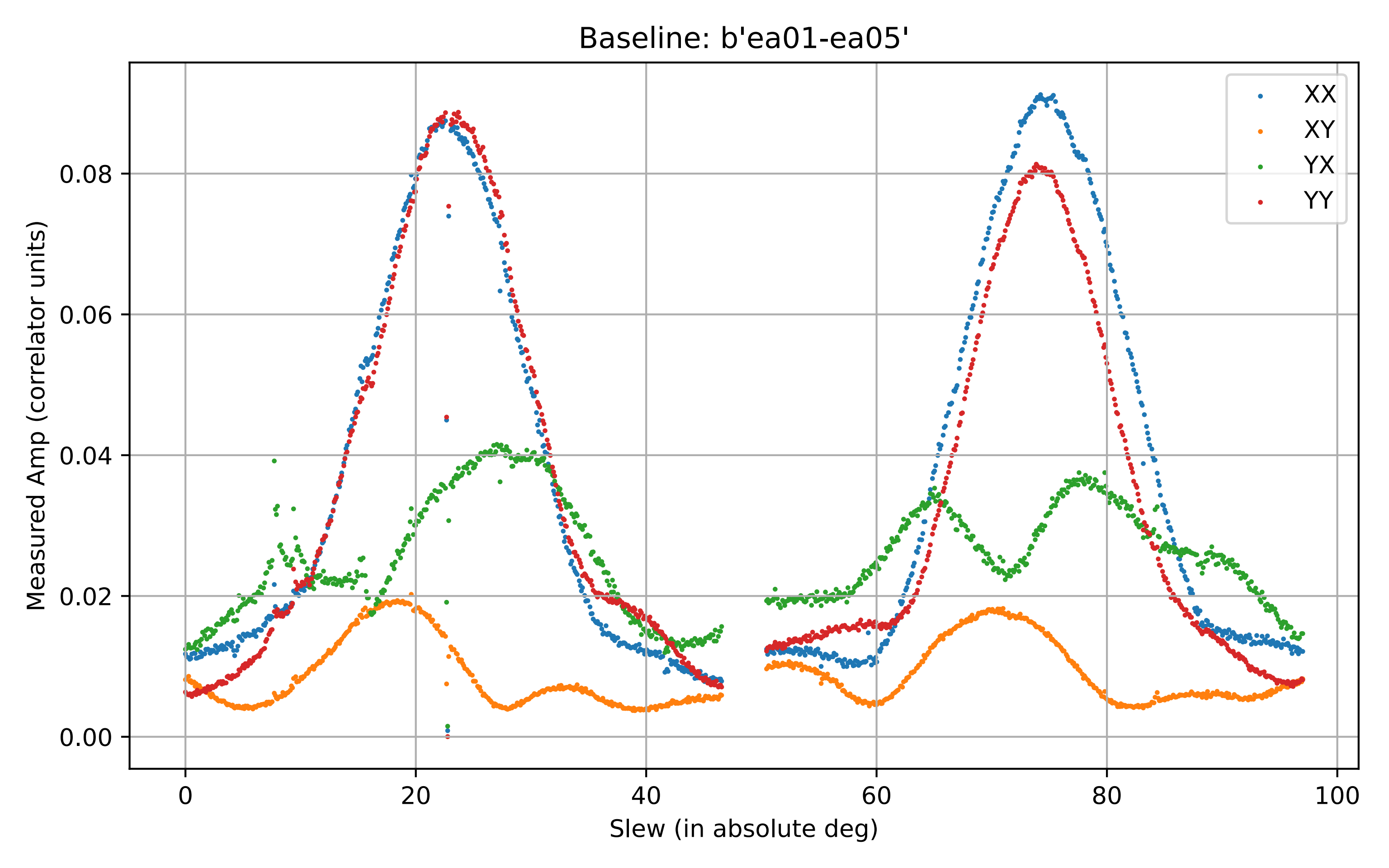
0.05
0.04
0.03
0.02
0.01
0
20
40
60
80
100
Slew (in absolute deg)

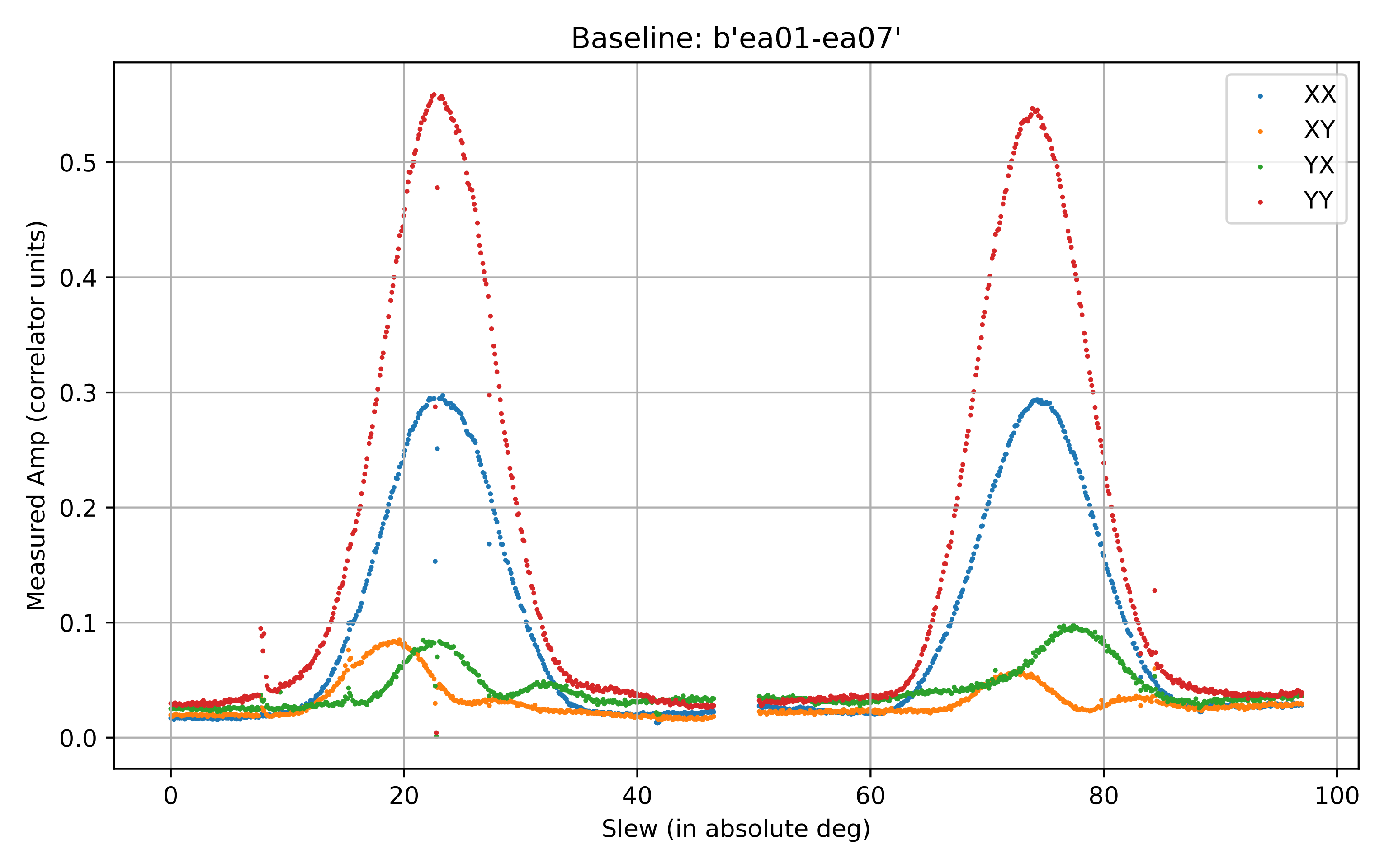

Baseline: b'ea01-ea03'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0.200
0
20
40
60
80
100

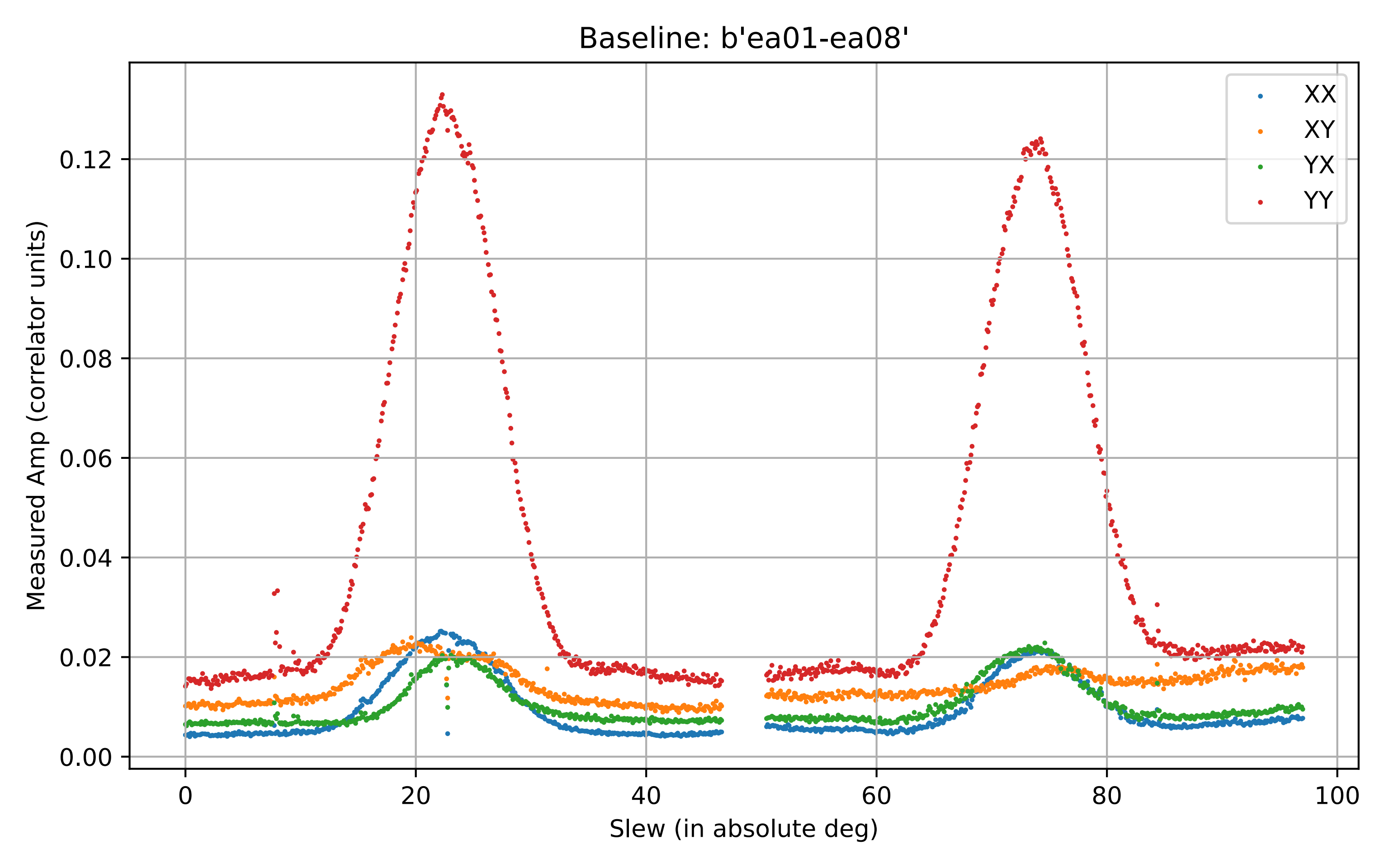


Baseline: b'ea01-ea04'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100



Baseline: b'ea01-ea05'
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea01-ea07'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100


Baseline: b'ea01-ea08'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
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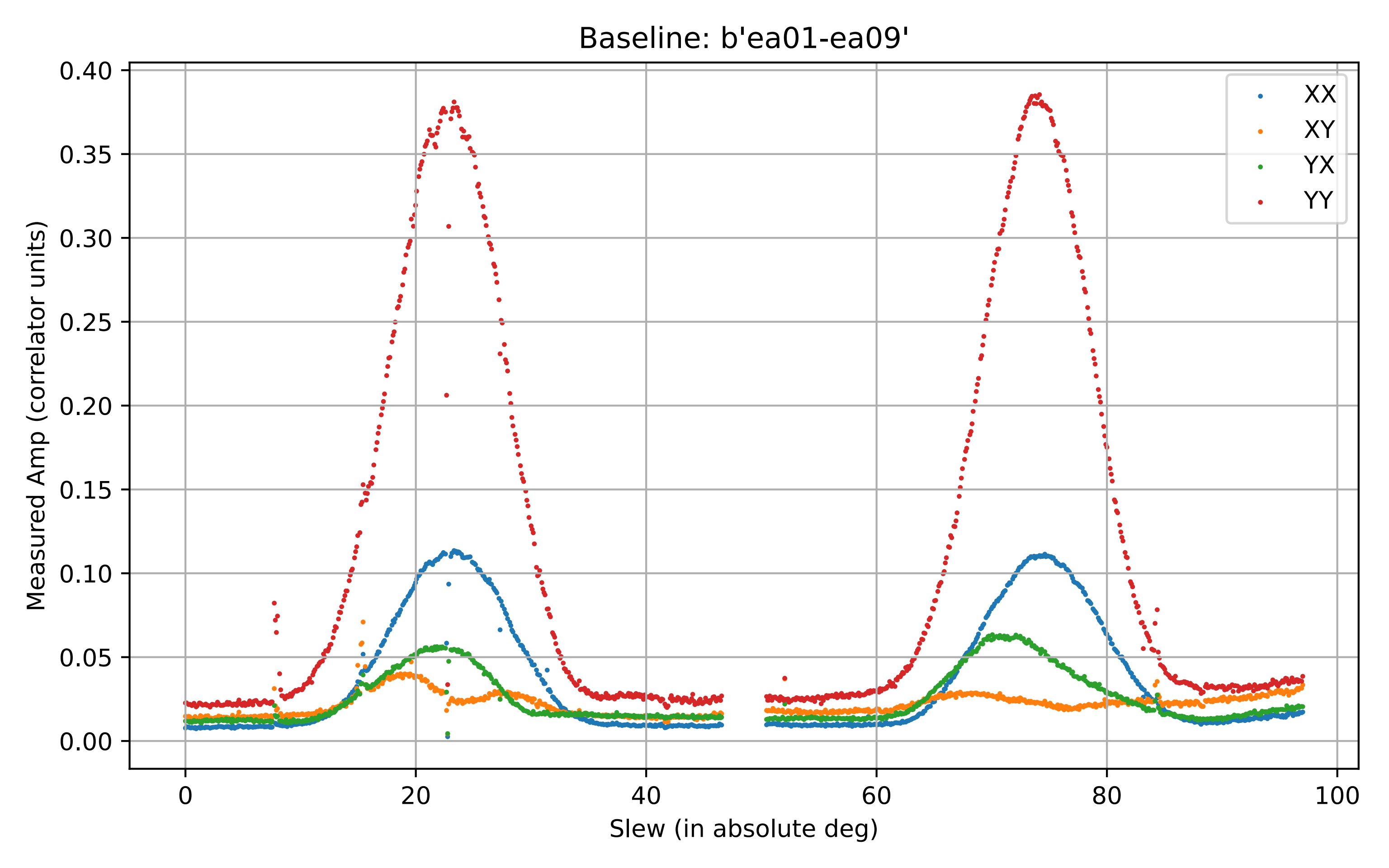
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)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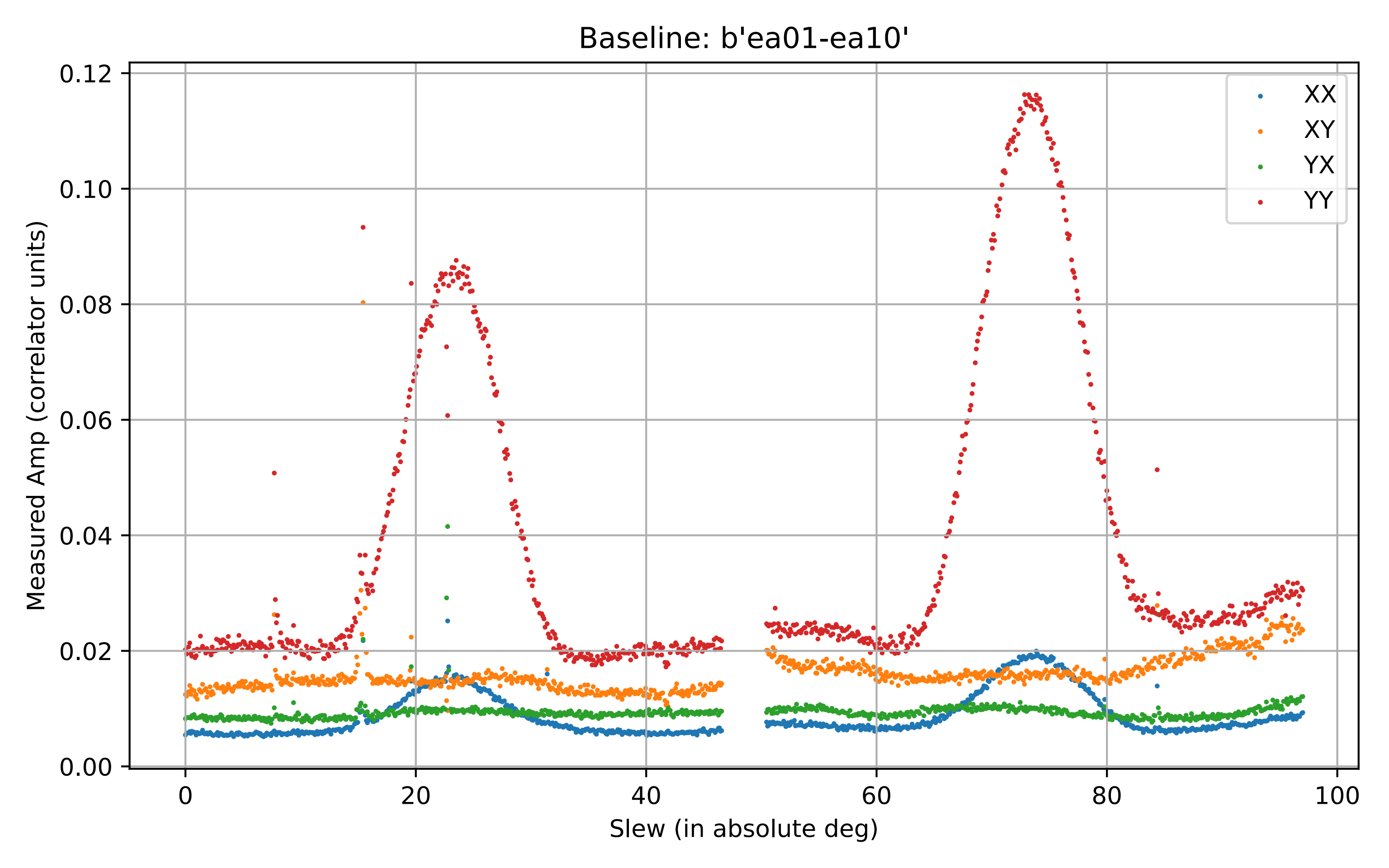
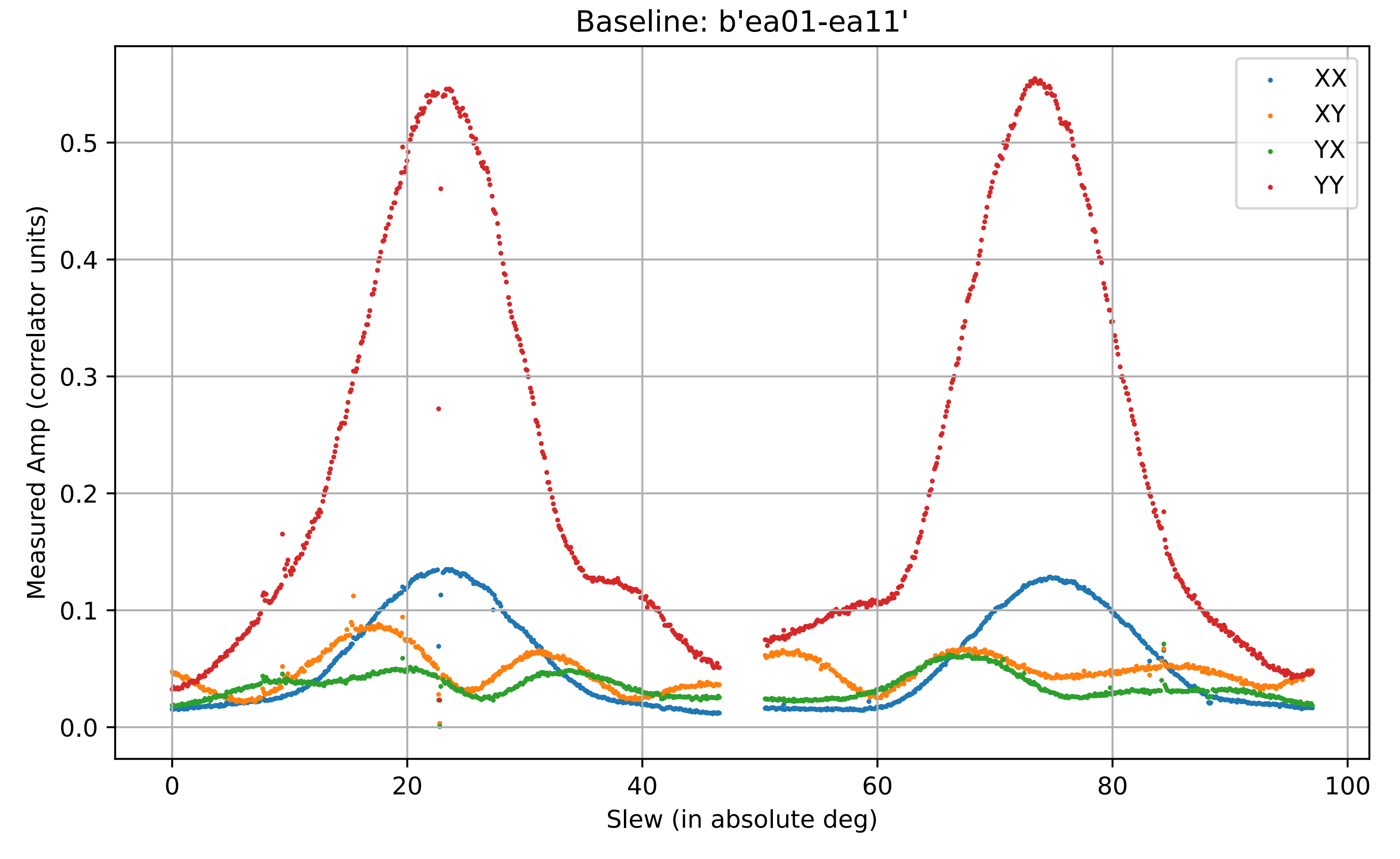
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100



Baseline: b'ea01-ea10'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)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Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
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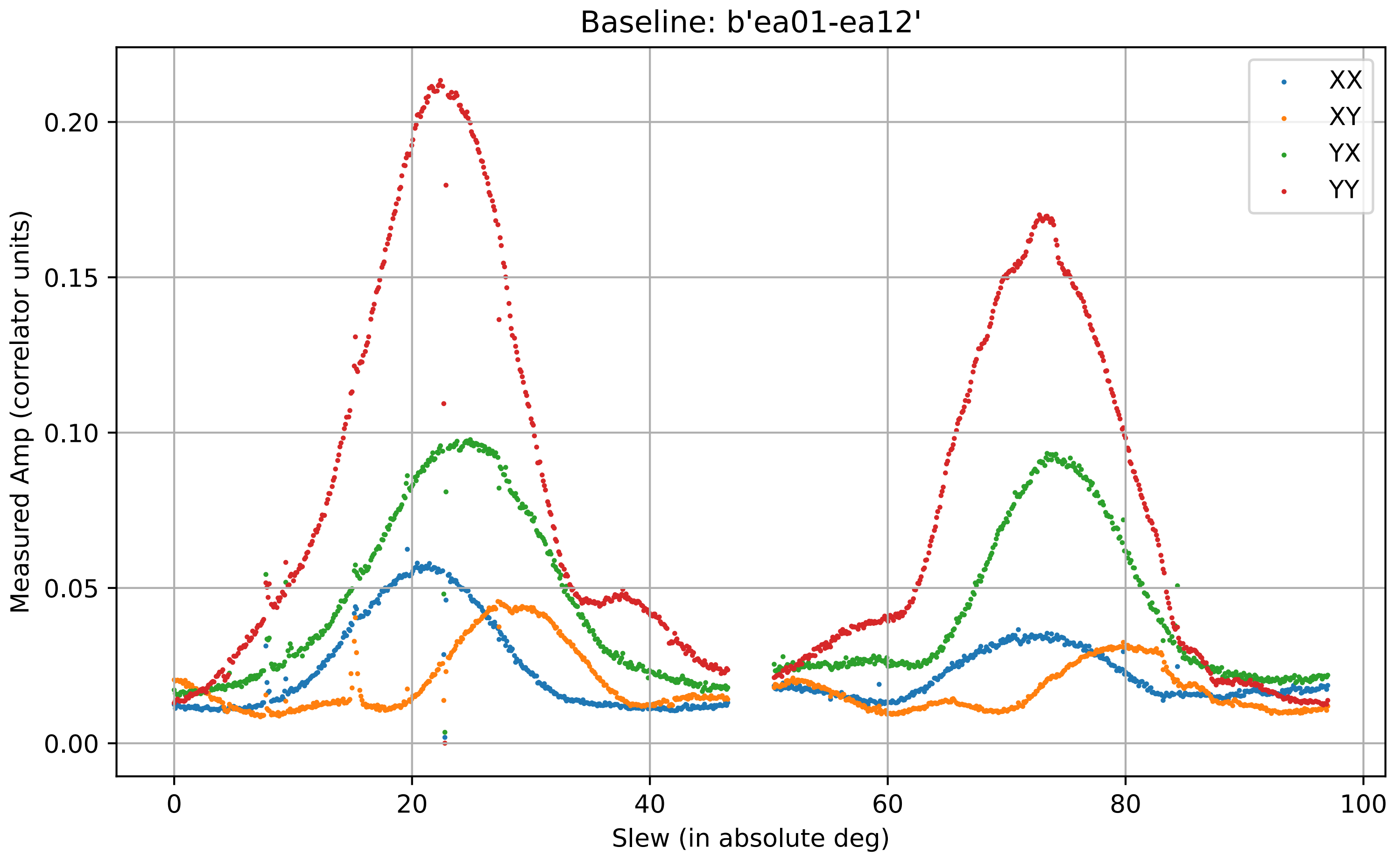
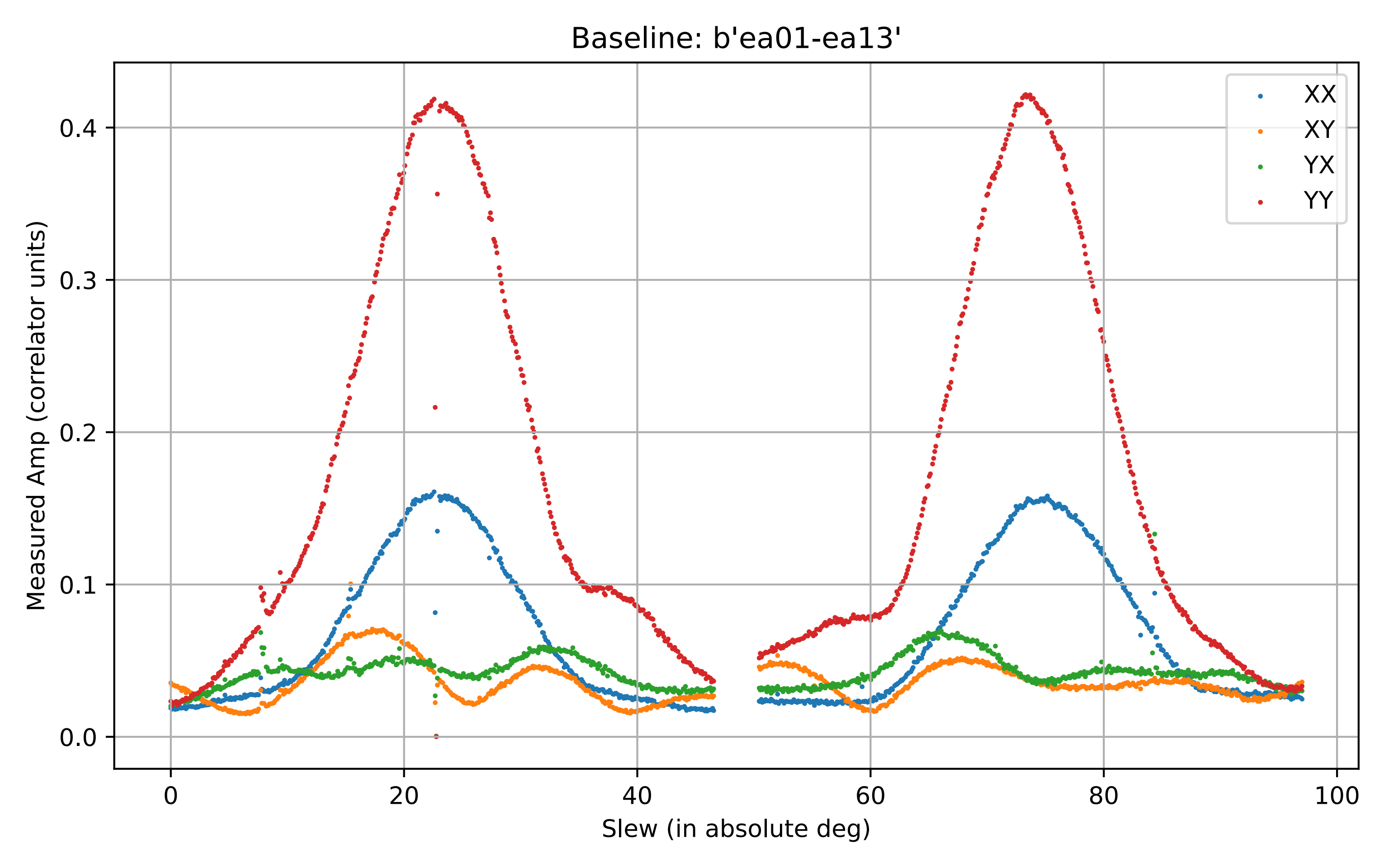
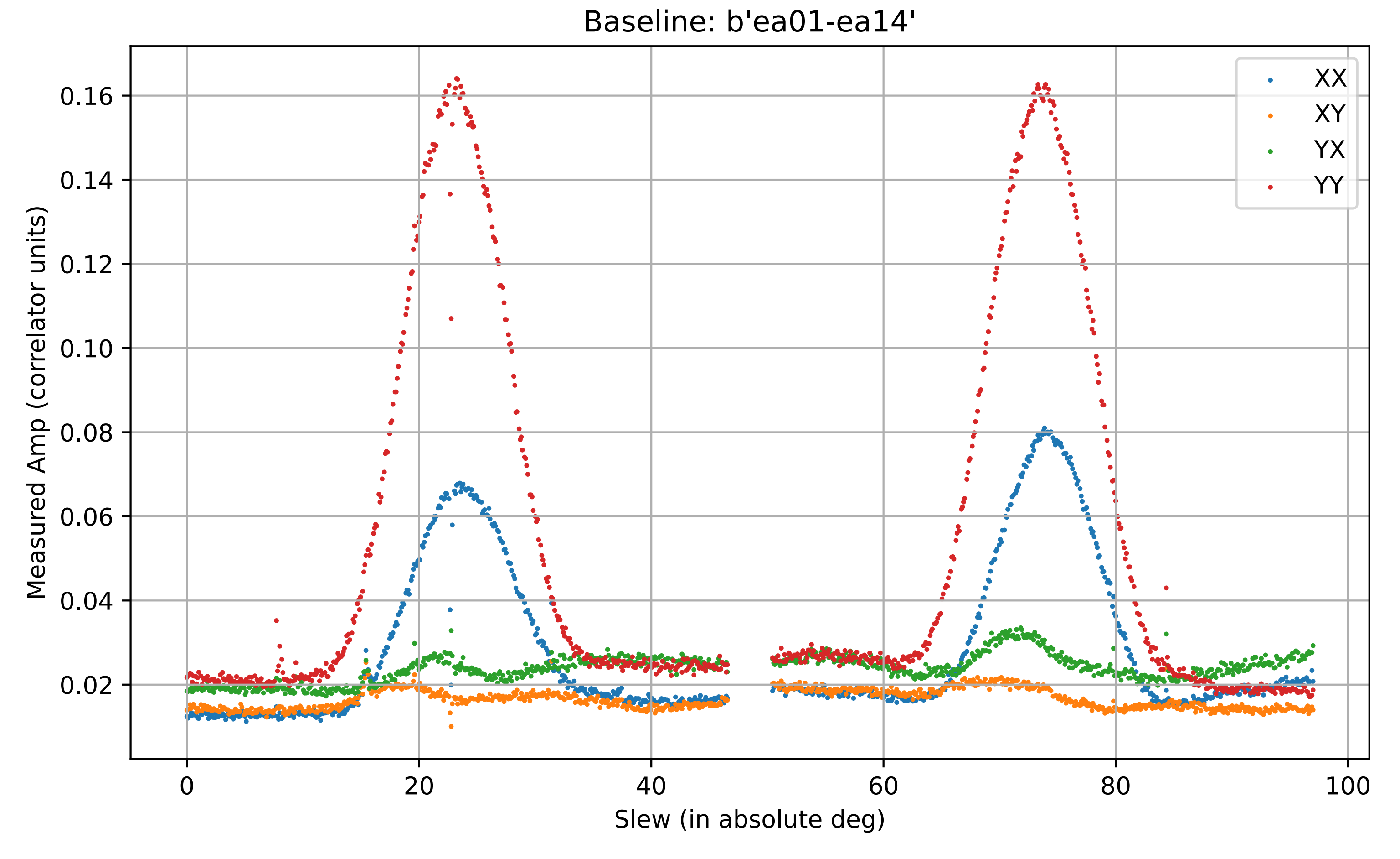
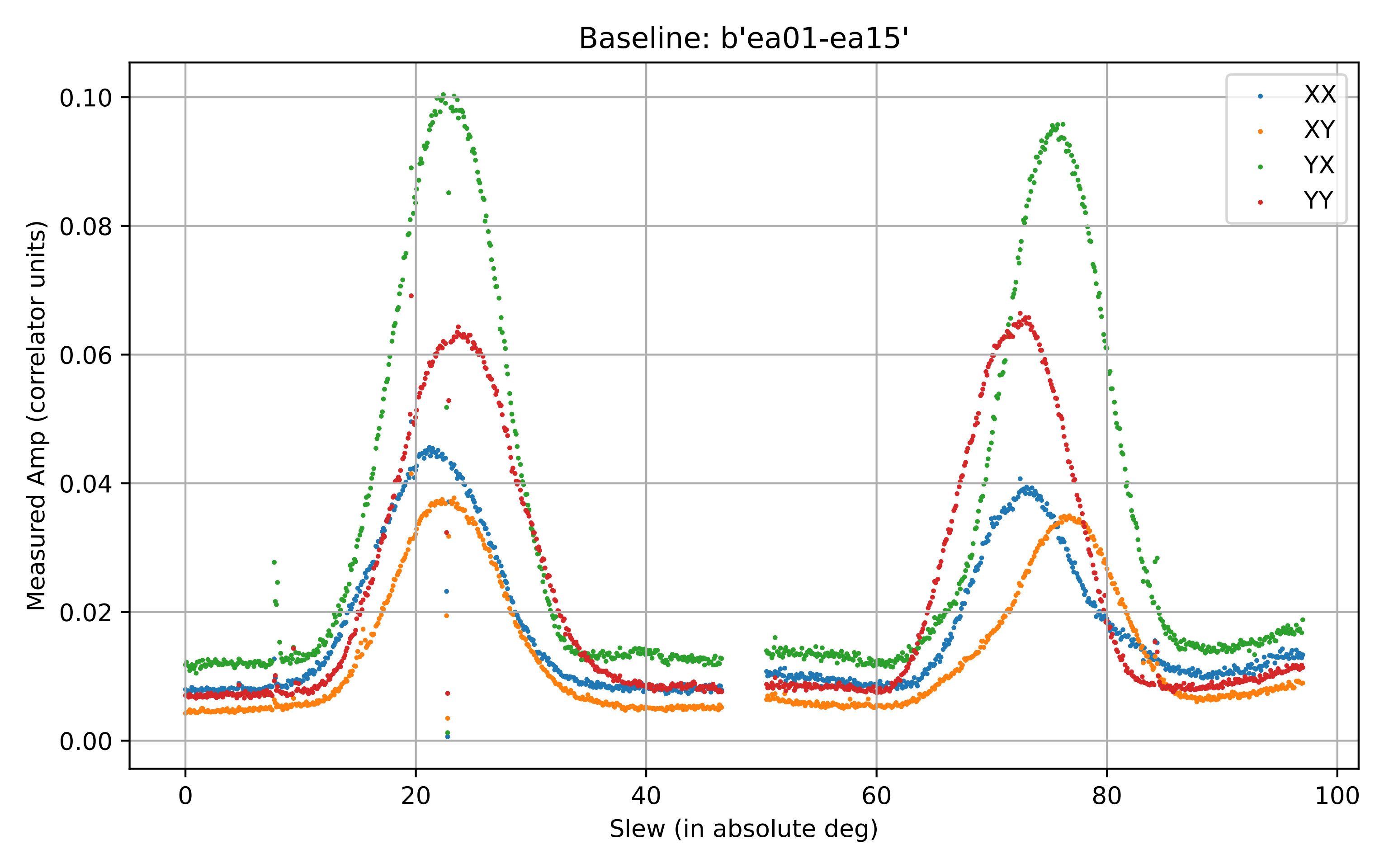
0.2
0.3
0.4
0.5
0
20
40
60
80
100

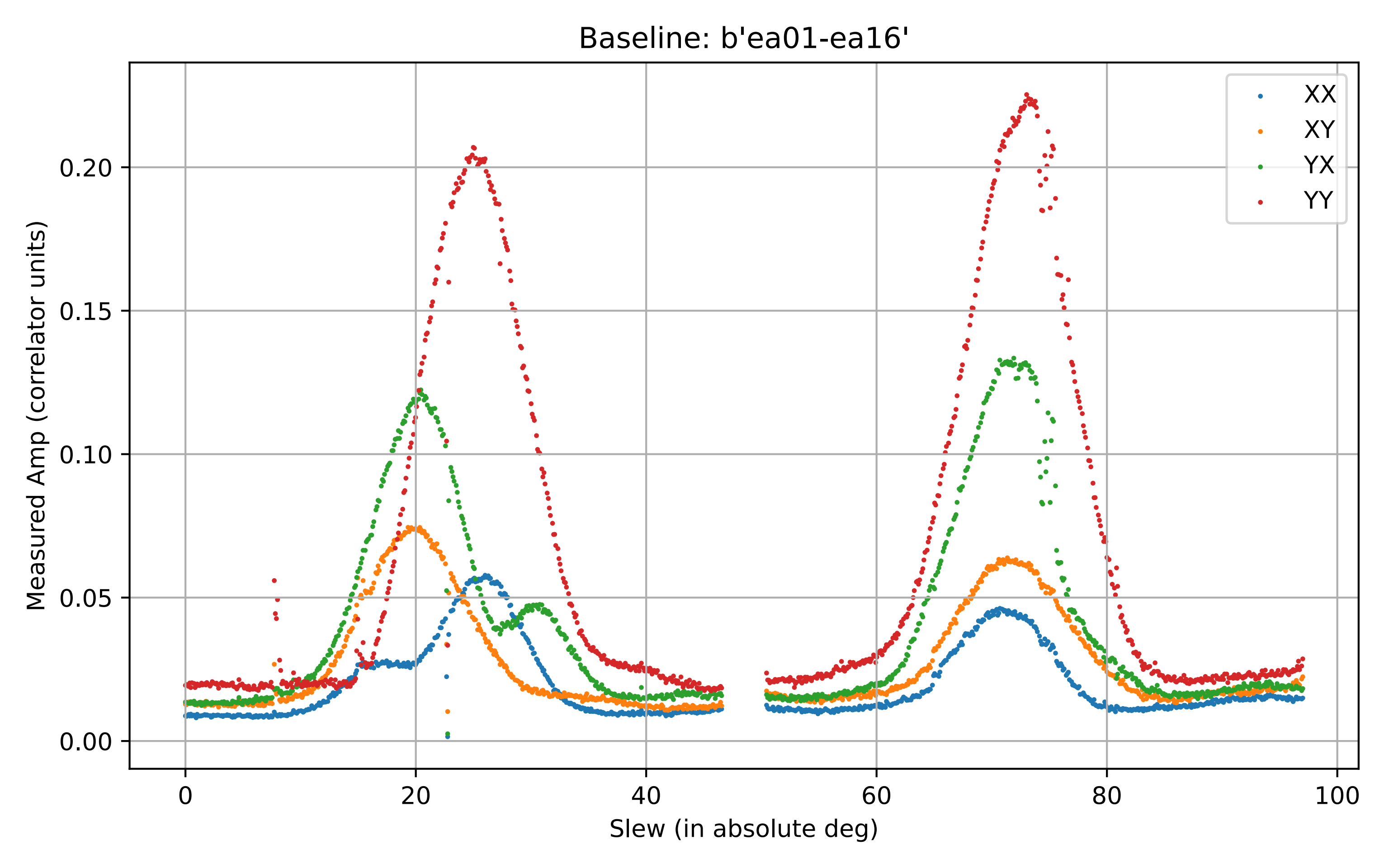

Baseline: b'ea01-ea12'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea01-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100

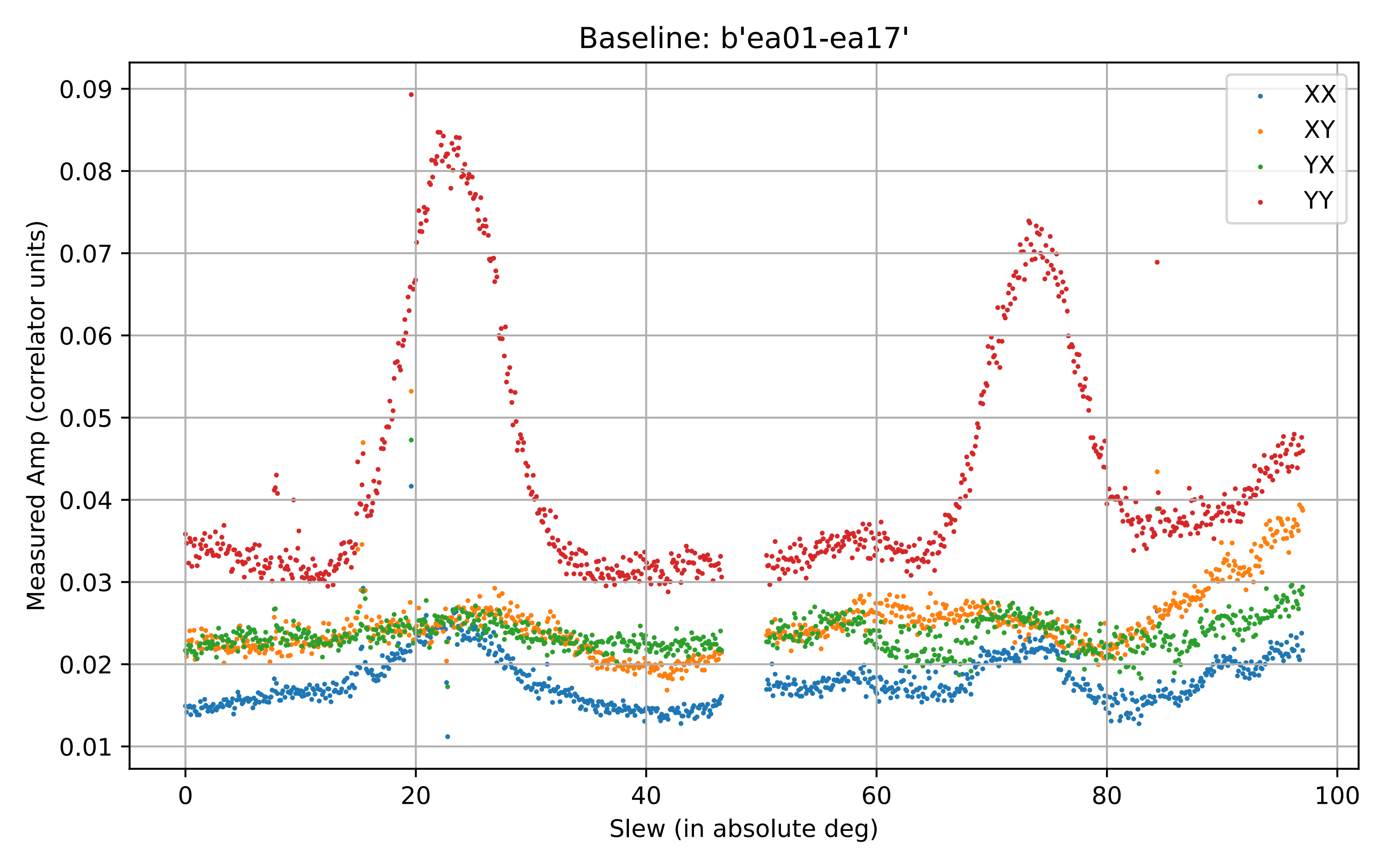

Baseline: b'ea01-ea14'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0
20
40
60
80
100



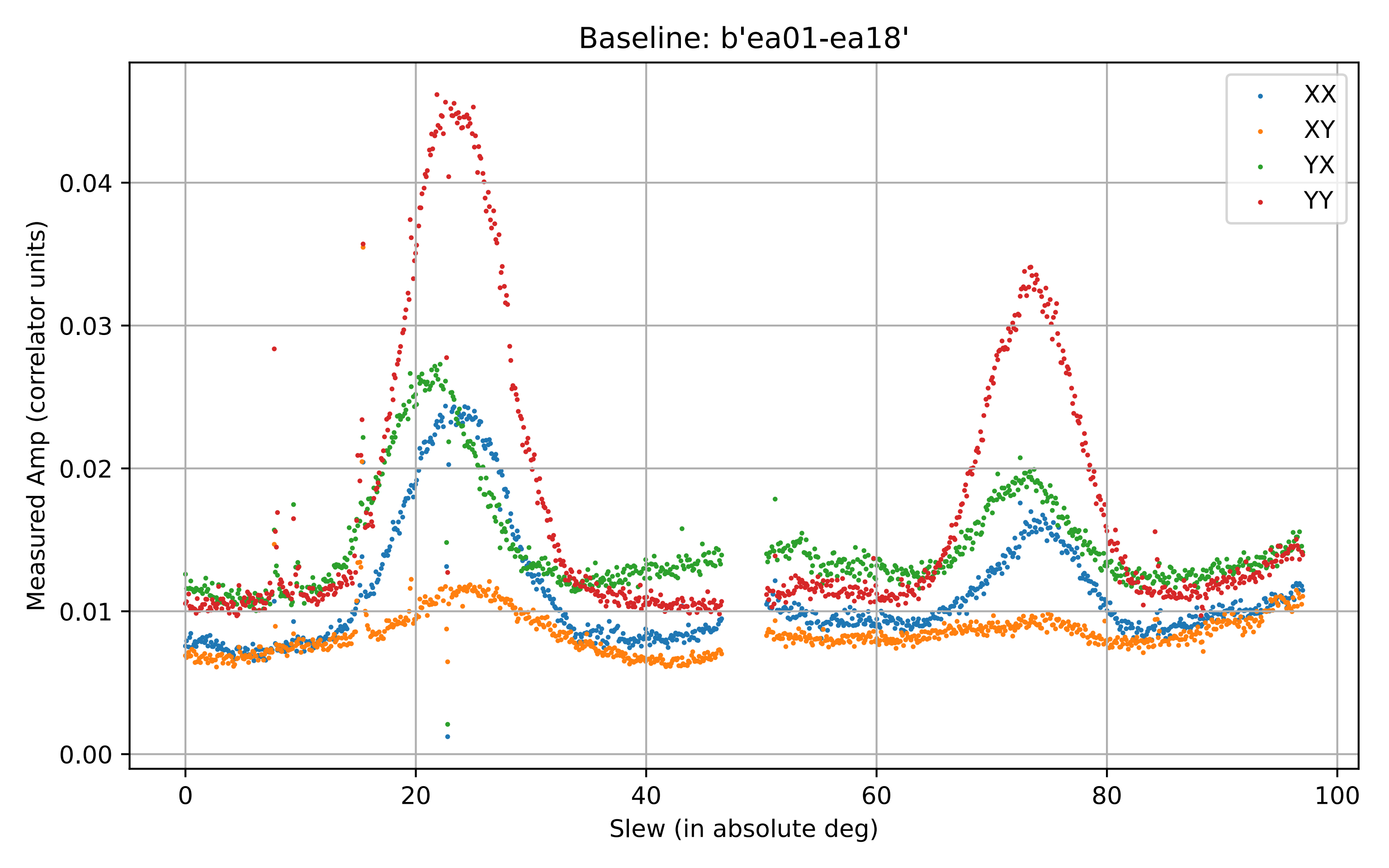
Baseline: b'ea01-ea15'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100

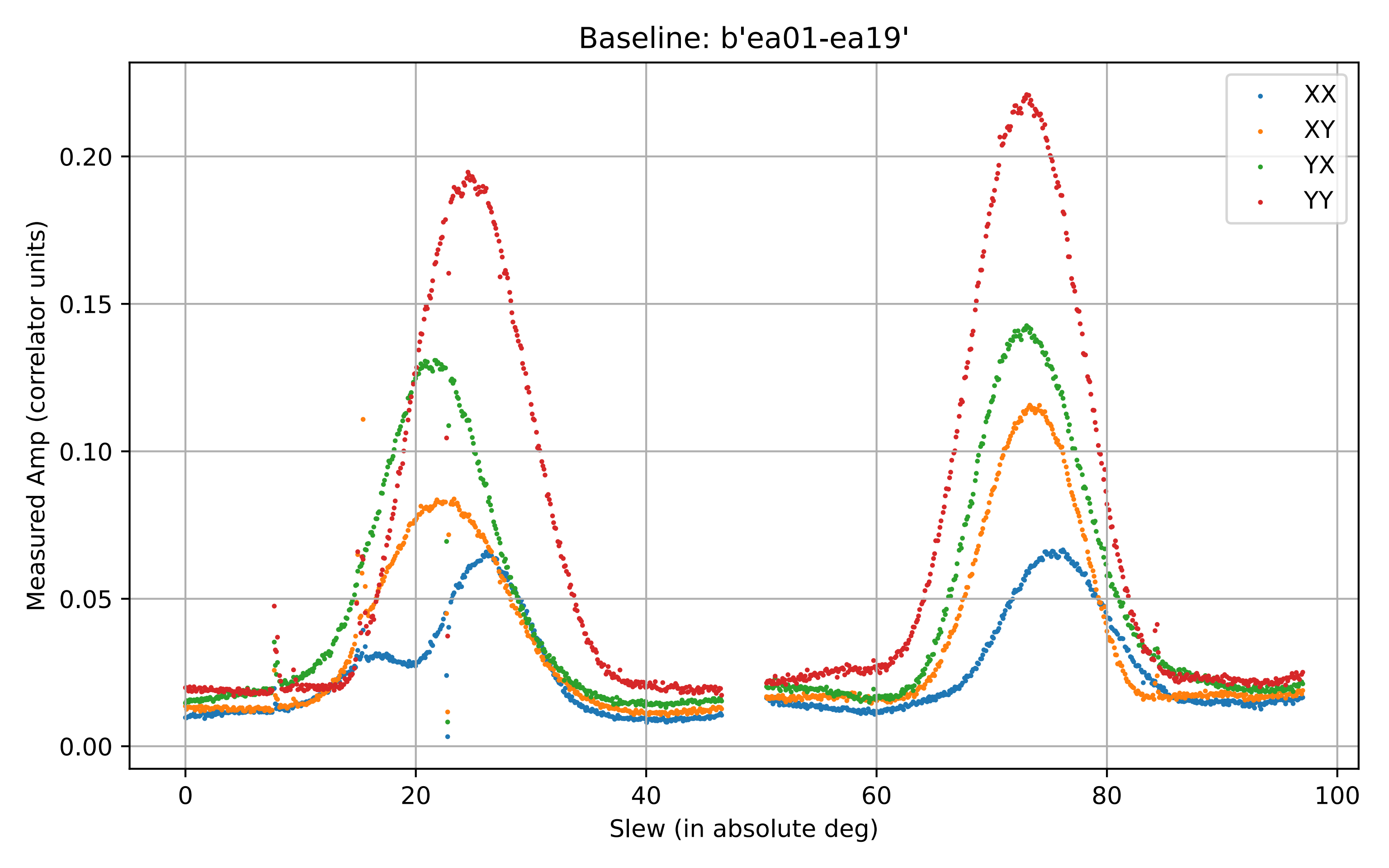


Baseline: b'ea01-ea16'
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

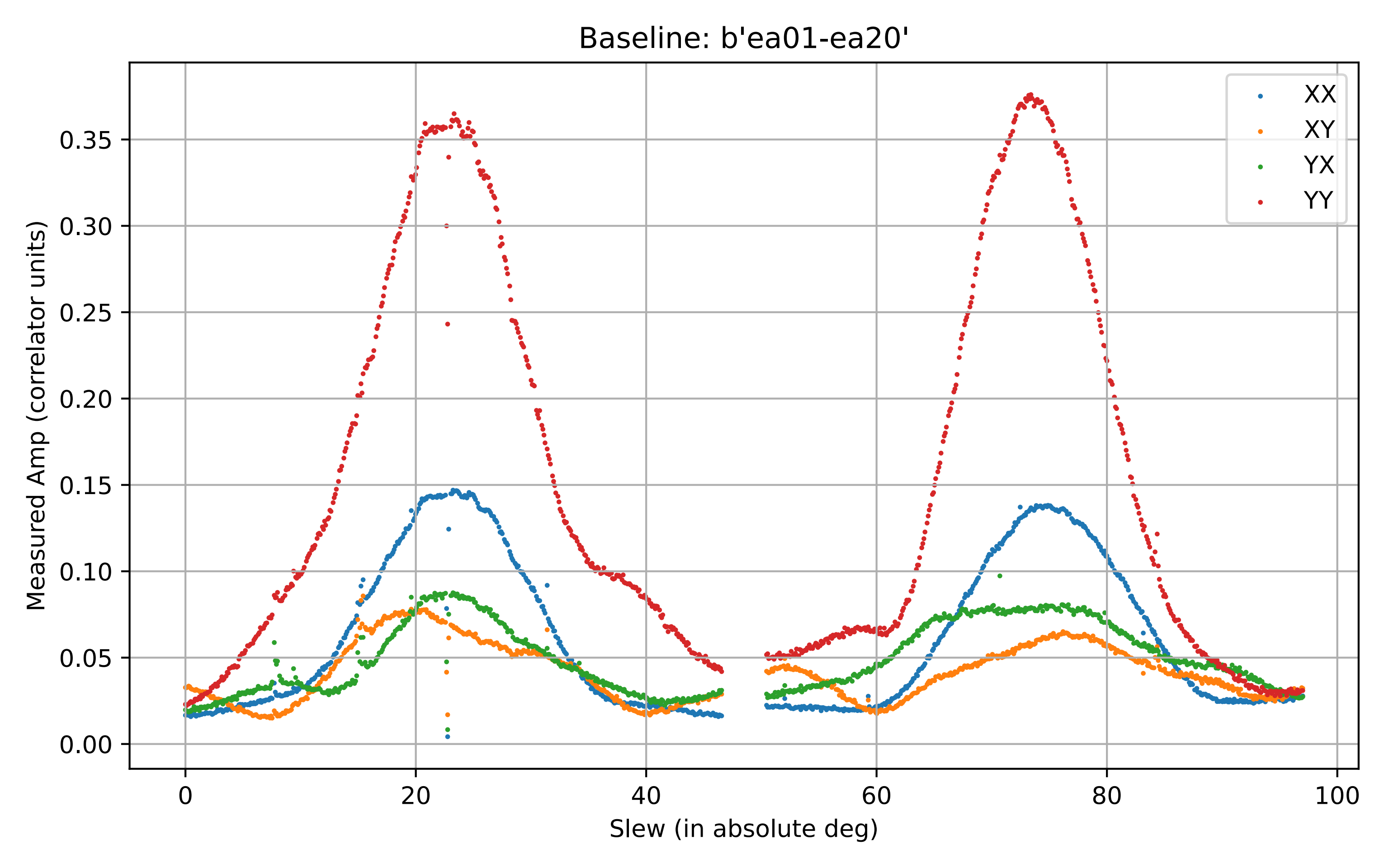


Baseline: b'ea01-ea17'
XX
XY
YX
YY
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

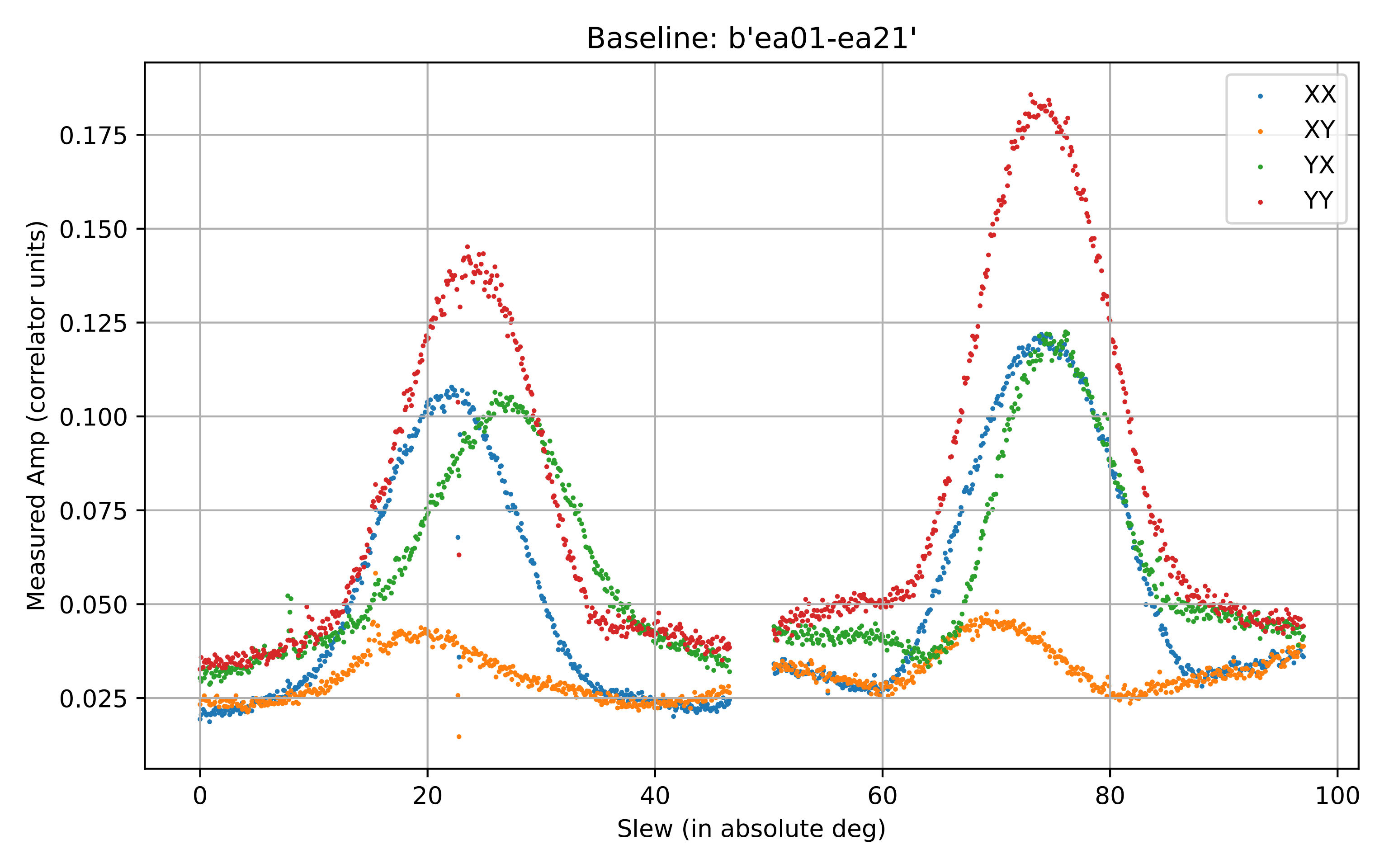

Baseline: b'ea01-ea18'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0
20
40
60
80
100
Slew (in absolute deg)



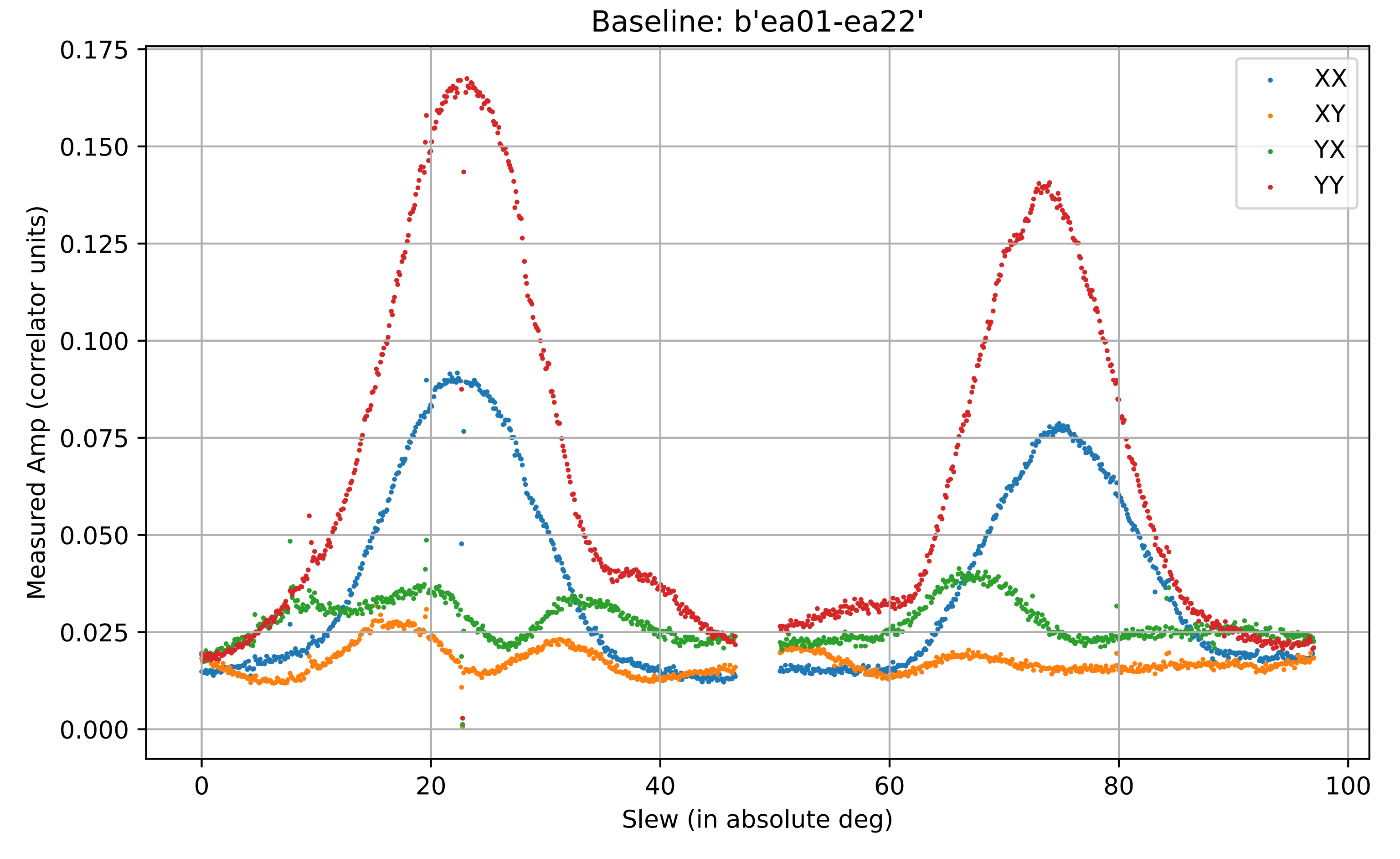
Baseline: b'ea01-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100



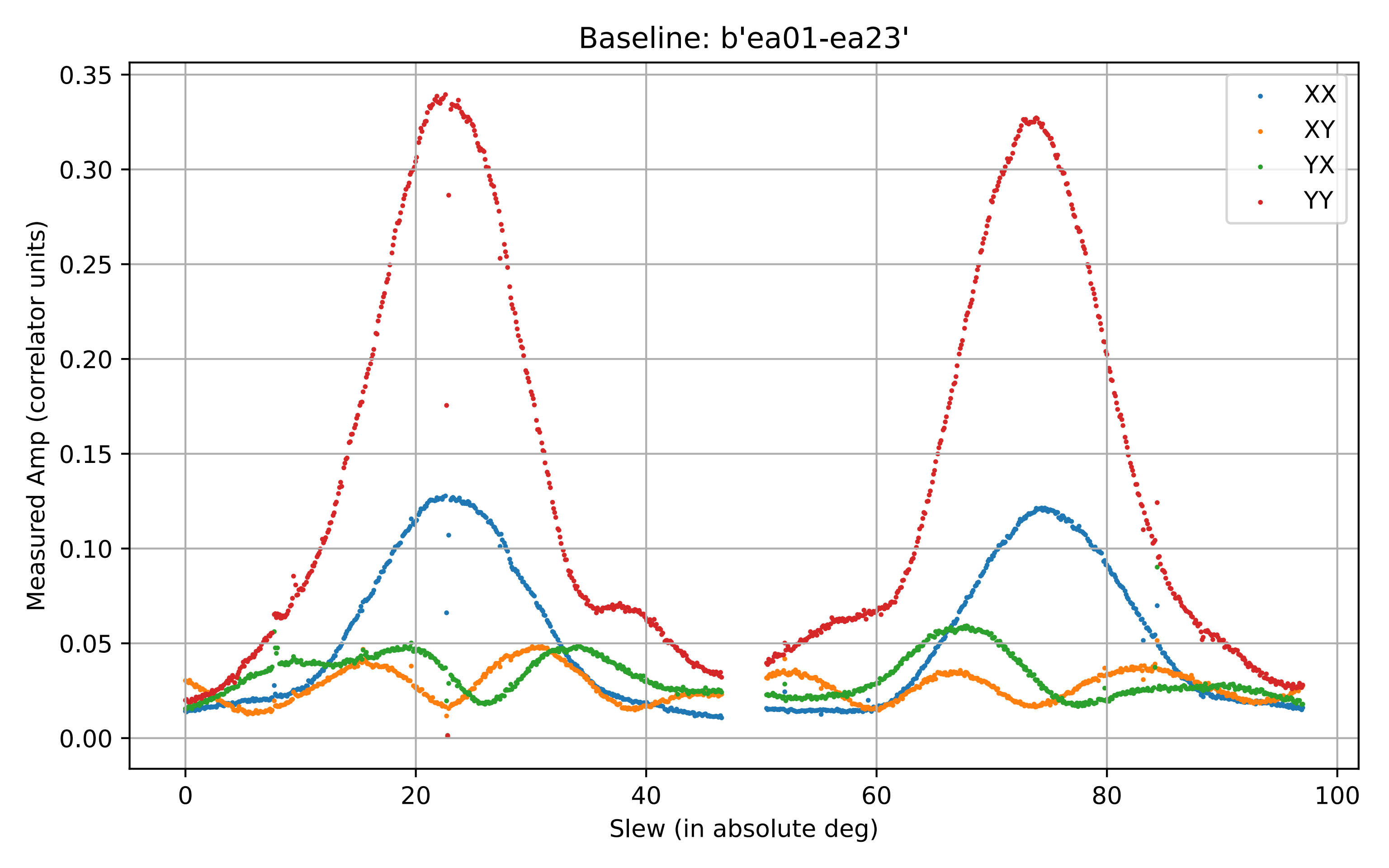
Baseline: b'ea01-ea20'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100



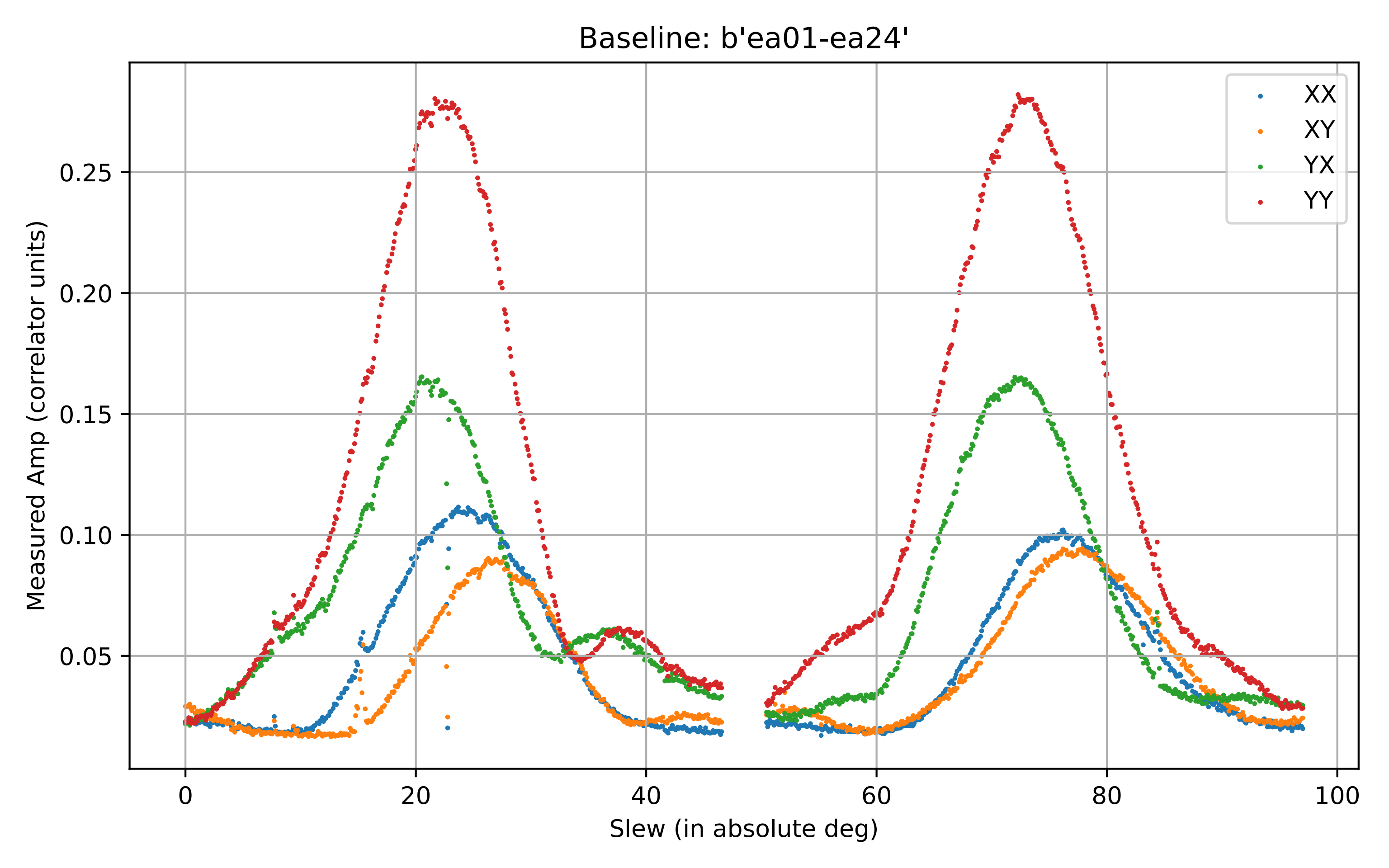
Baseline: b'ea01-ea21'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100

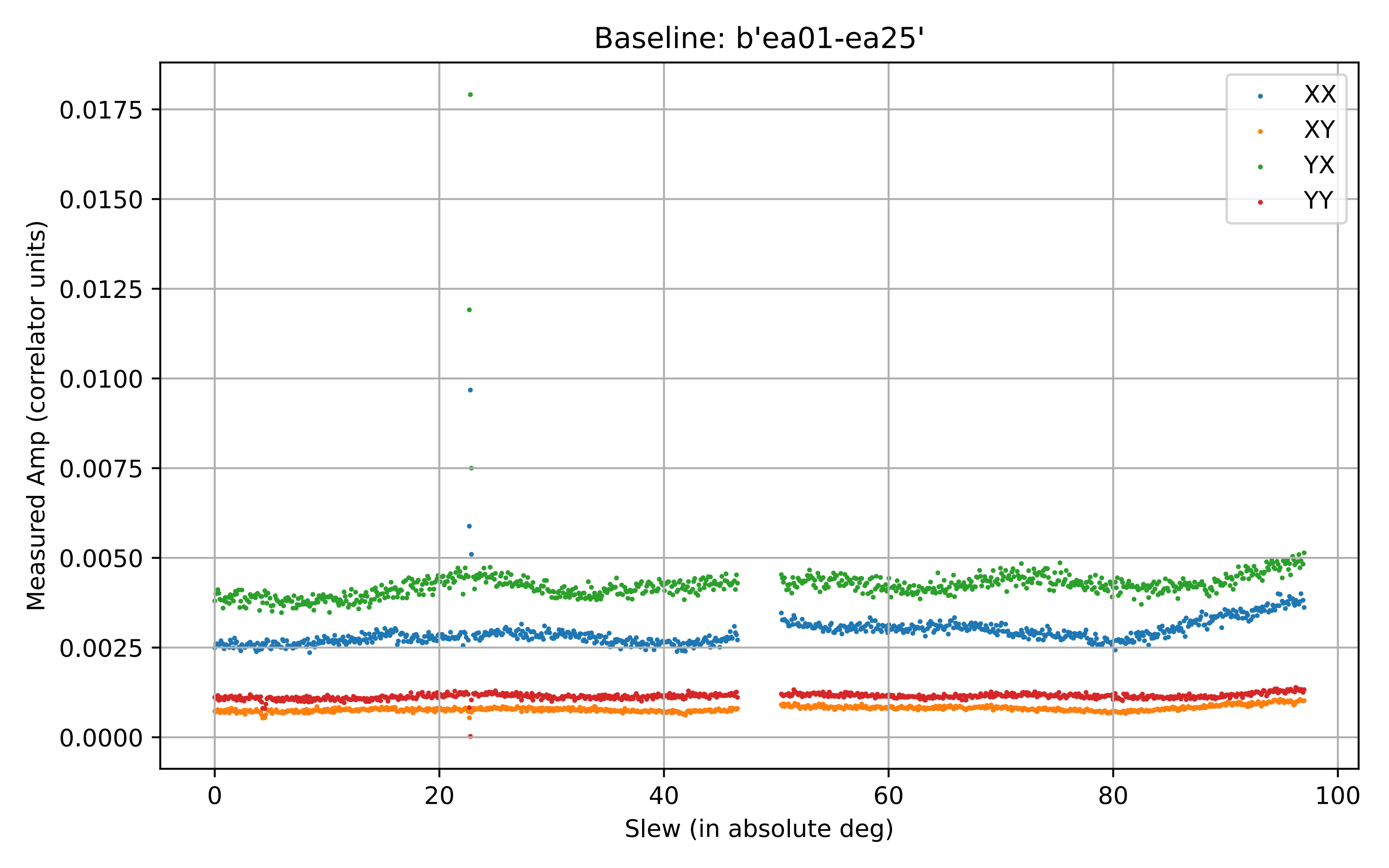


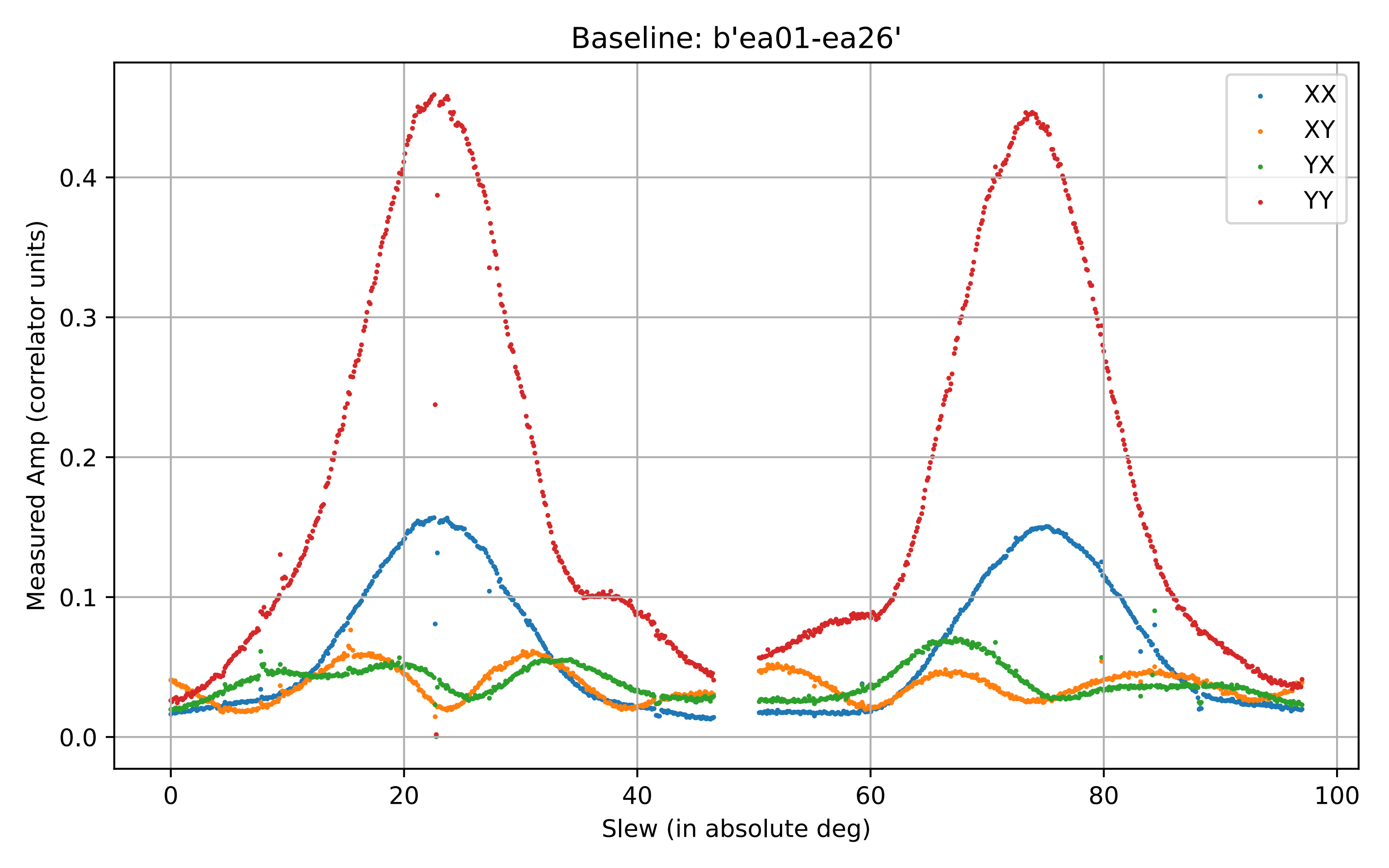
Baseline: b'ea01-ea22'
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



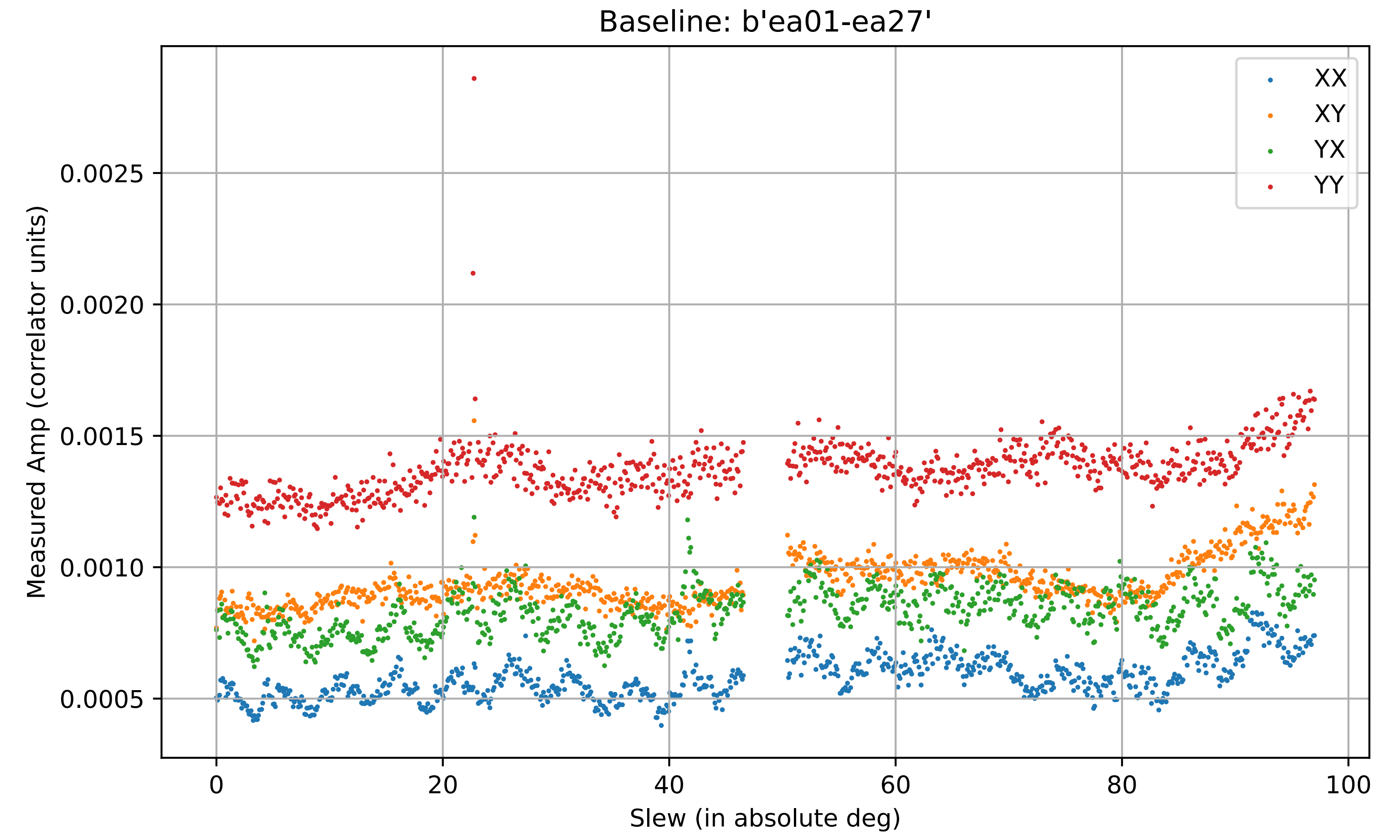
Baseline: b'ea01-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100


Baseline: b'ea01-ea24'
XX
XY
YX
YY
Measured Amp (correlator units)
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)

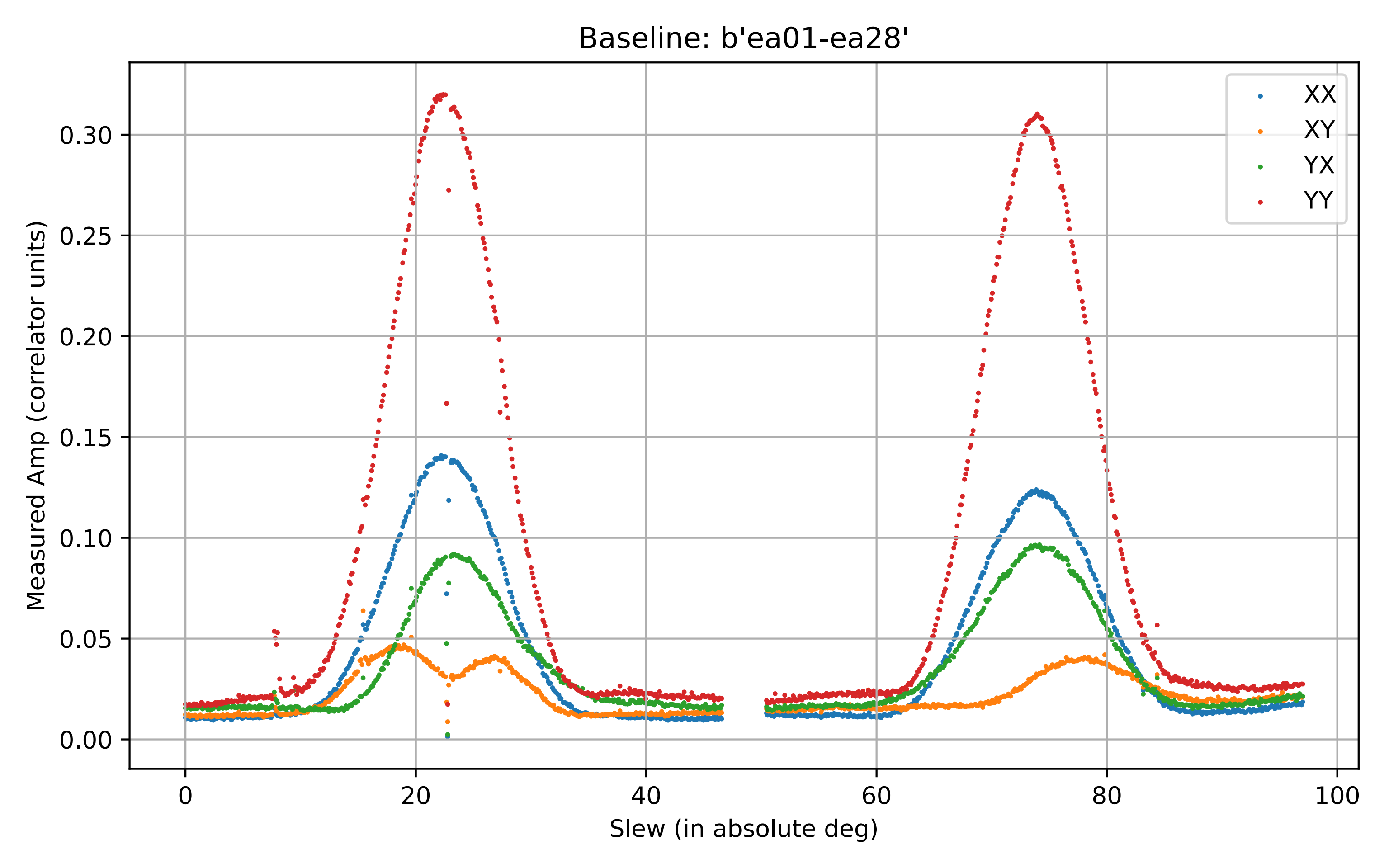

Baseline: b'ea01-ea25'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0000
0.0025
0.0050
0.0075
0.0100
0.0125
0.0150
0.0175
0
20
40
60
80
100
Slew (in absolute deg)



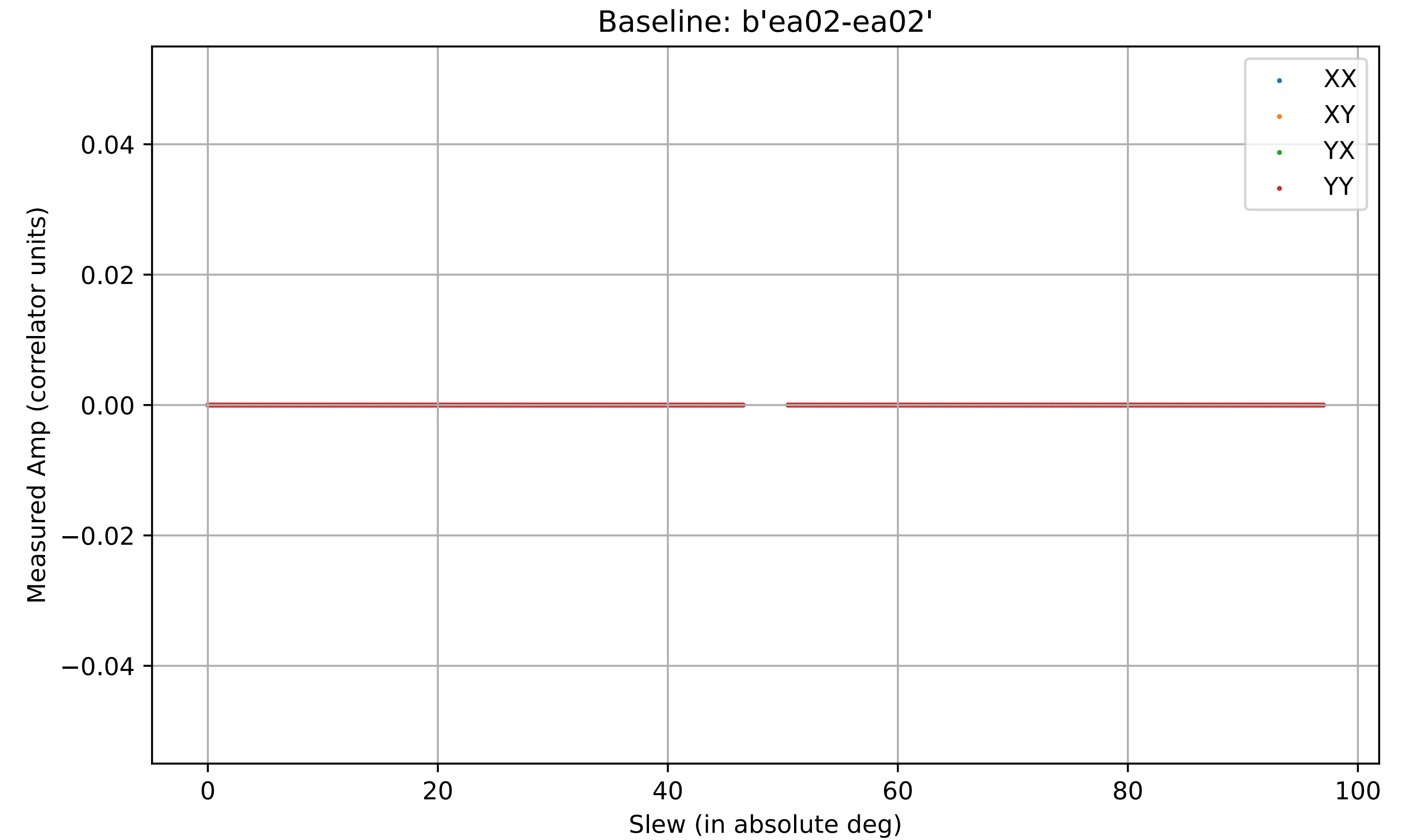
Baseline: b'ea01-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100



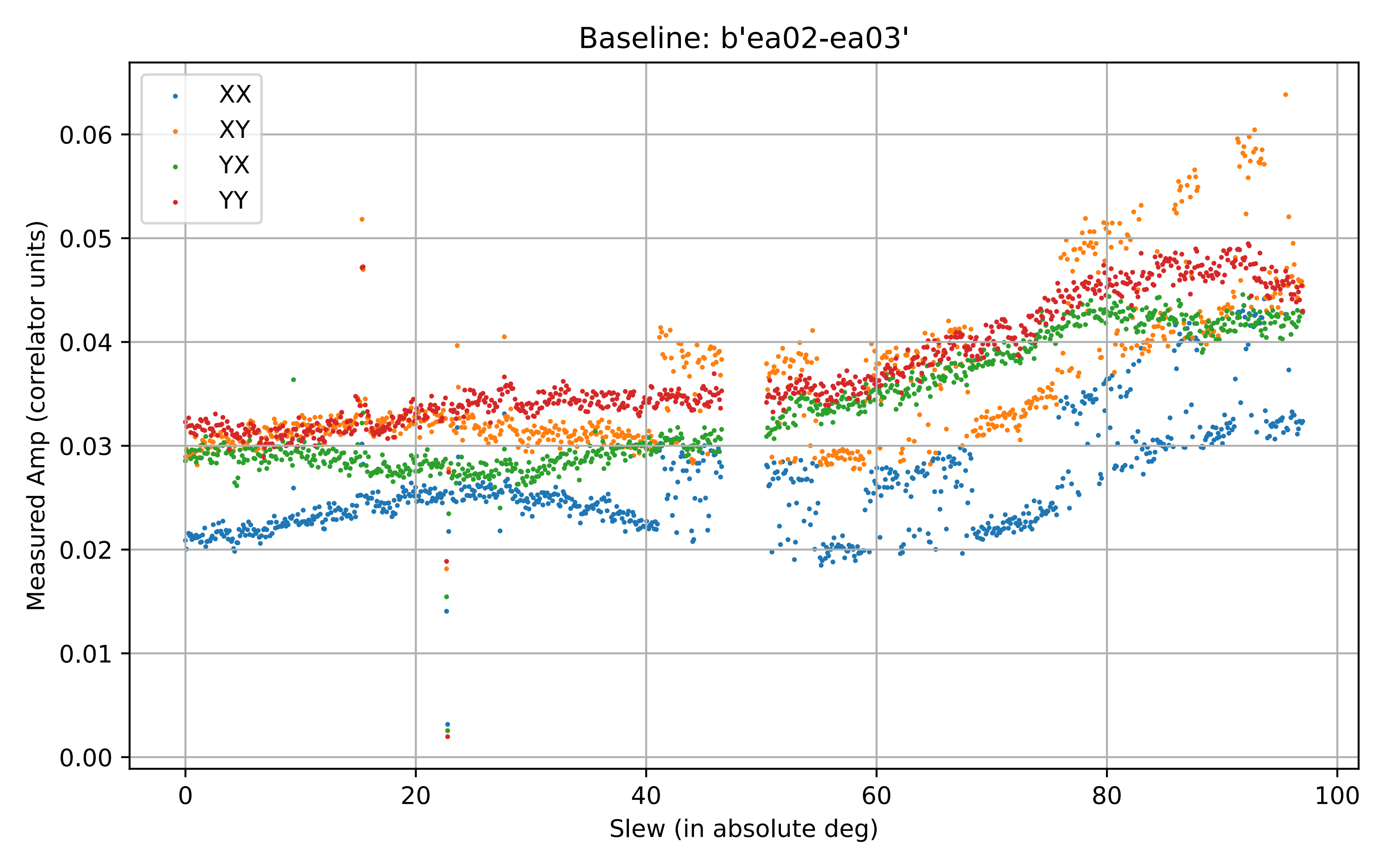
Baseline: b'ea01-ea27'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0025
0.0020
0.0015
0.0010
0.0005
0
20
40
60
80
100

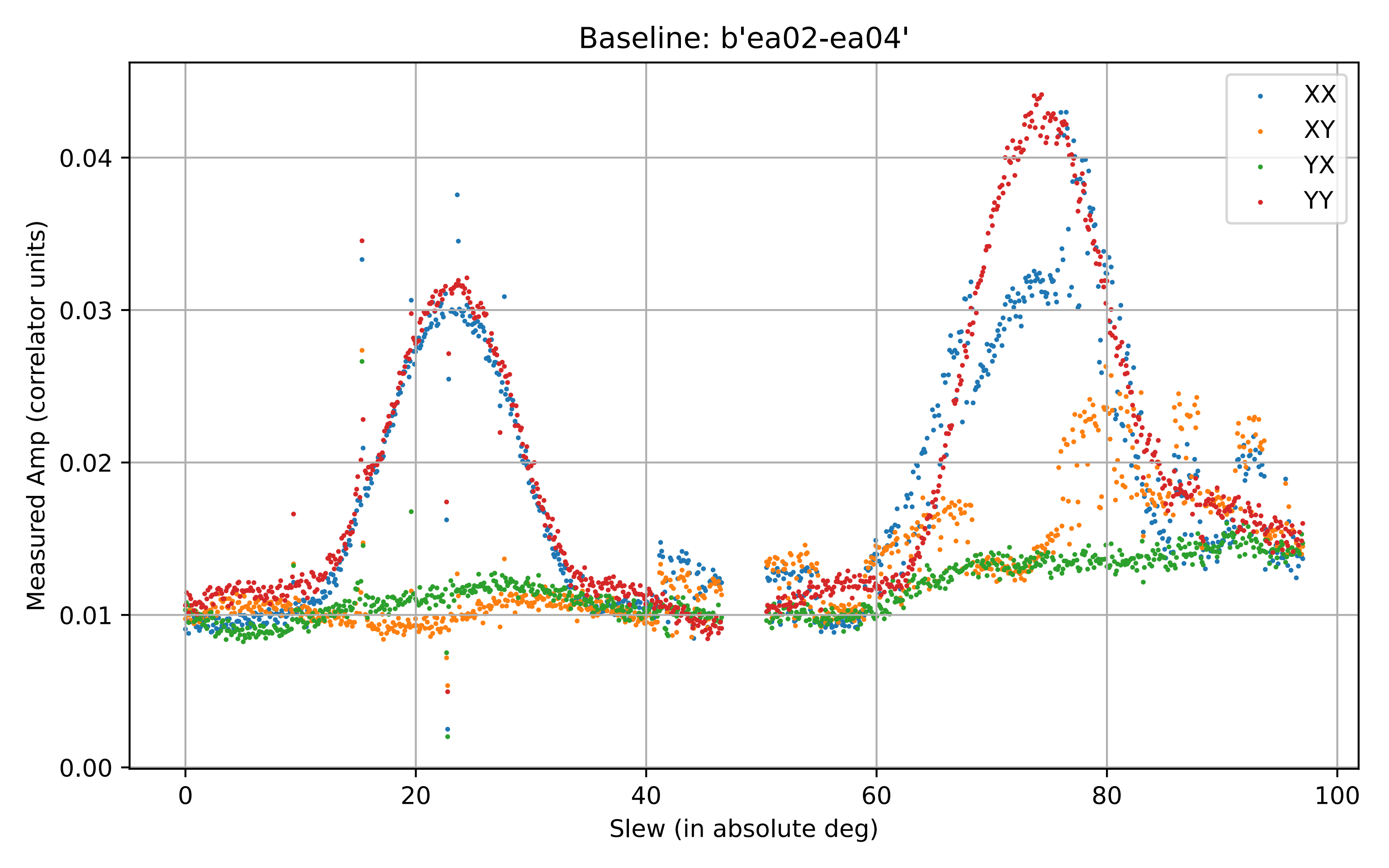


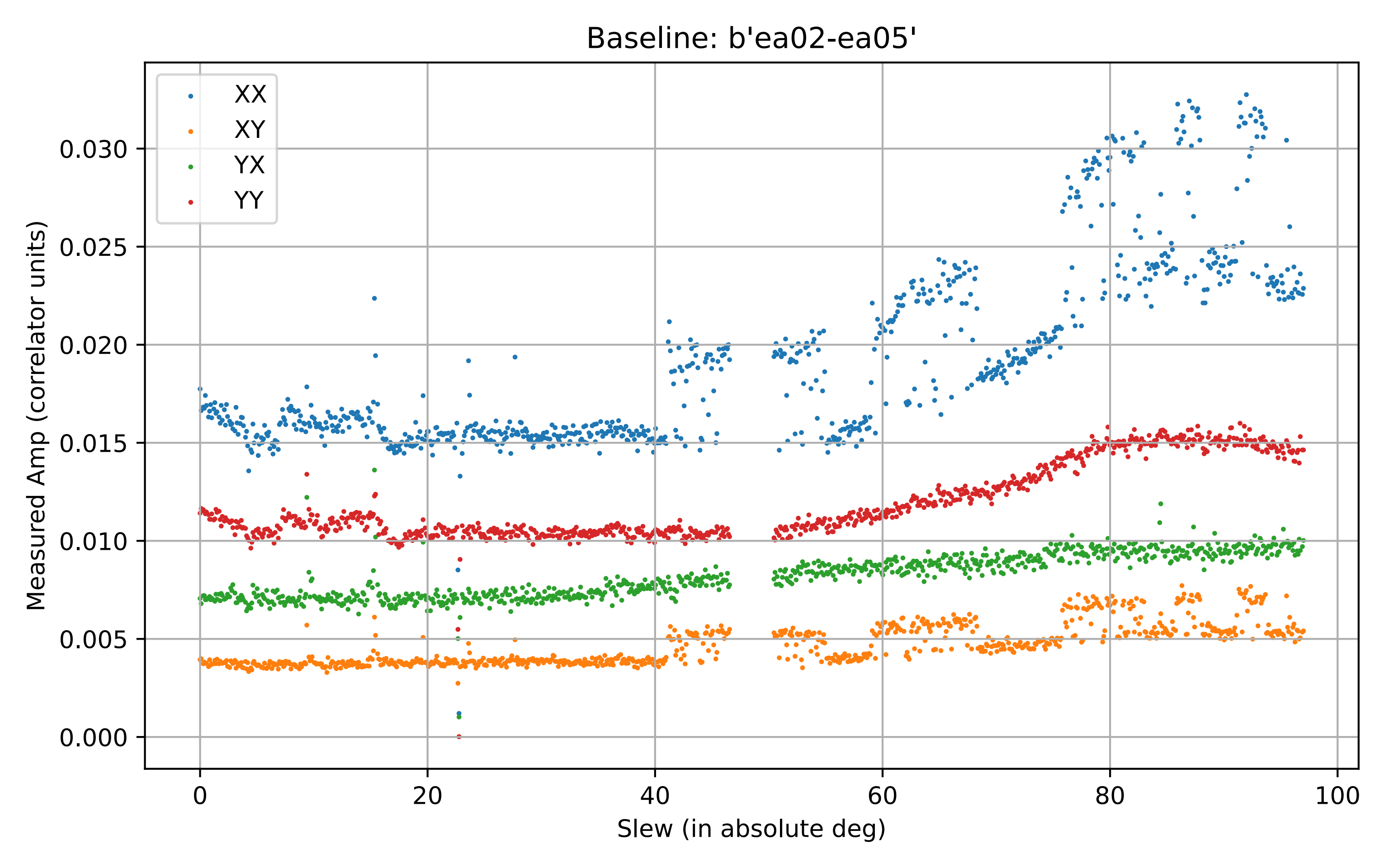
Baseline: b'ea01-ea28'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100
Slew (in absolute deg)

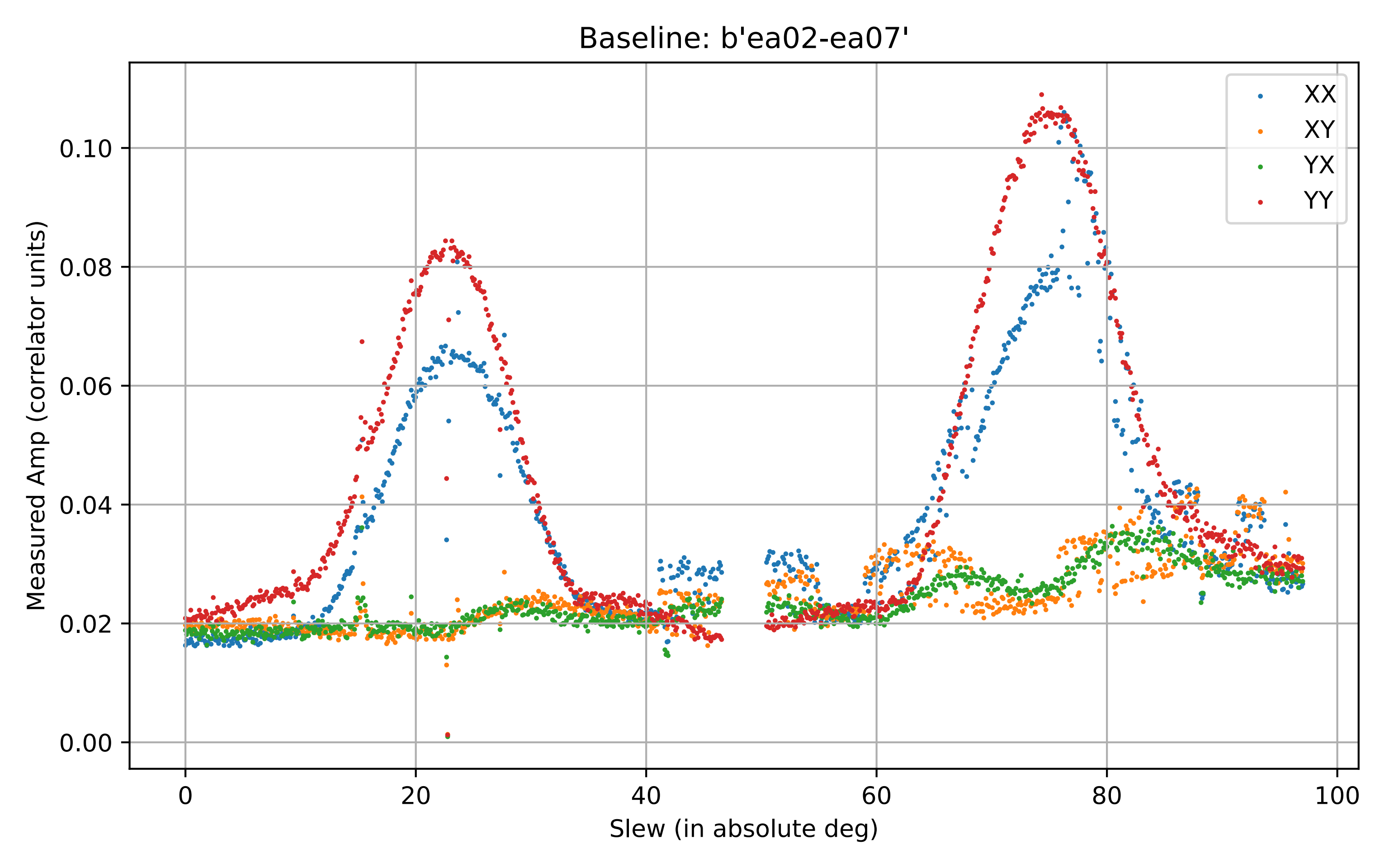


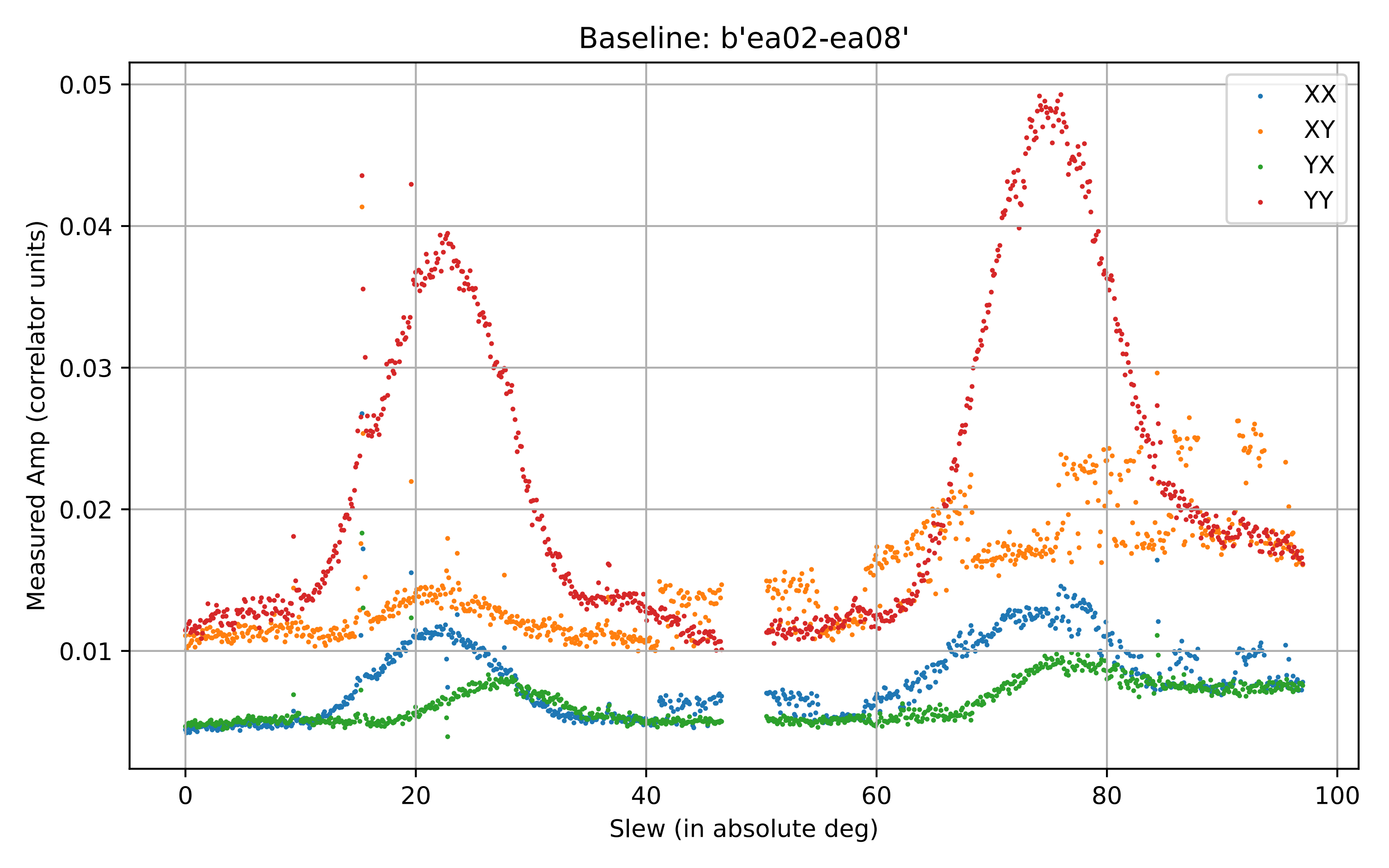
Baseline: b'ea02-ea02'
Measured Amp (correlator units)
0.04
0.02
0.00
−0.02
−0.04
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

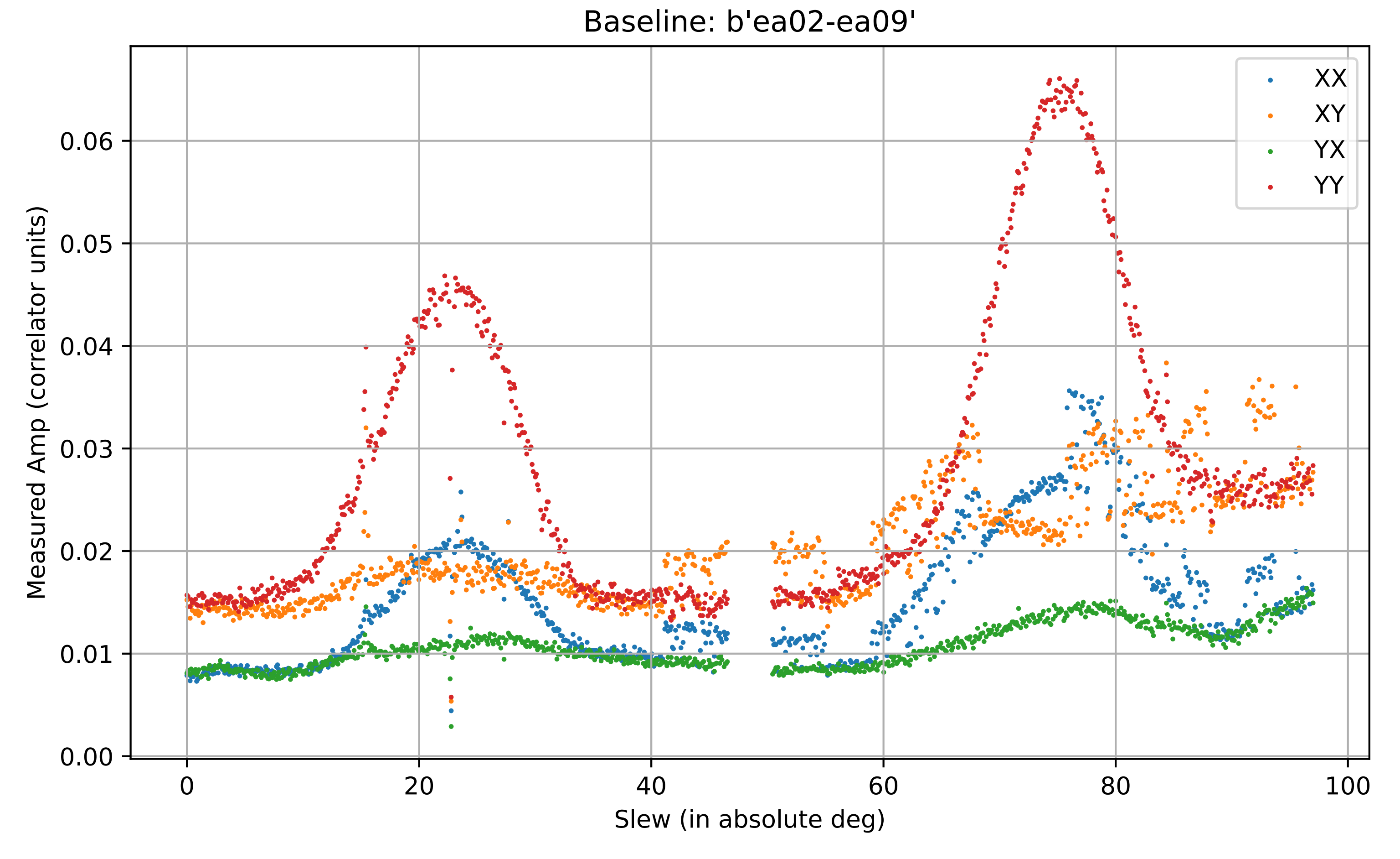

Baseline: b'ea02-ea03'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100


Baseline: b'ea02-ea04'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.01
0.02
0.03
0.04
0
20
40
60
80
100
XX
XY
YX
YY

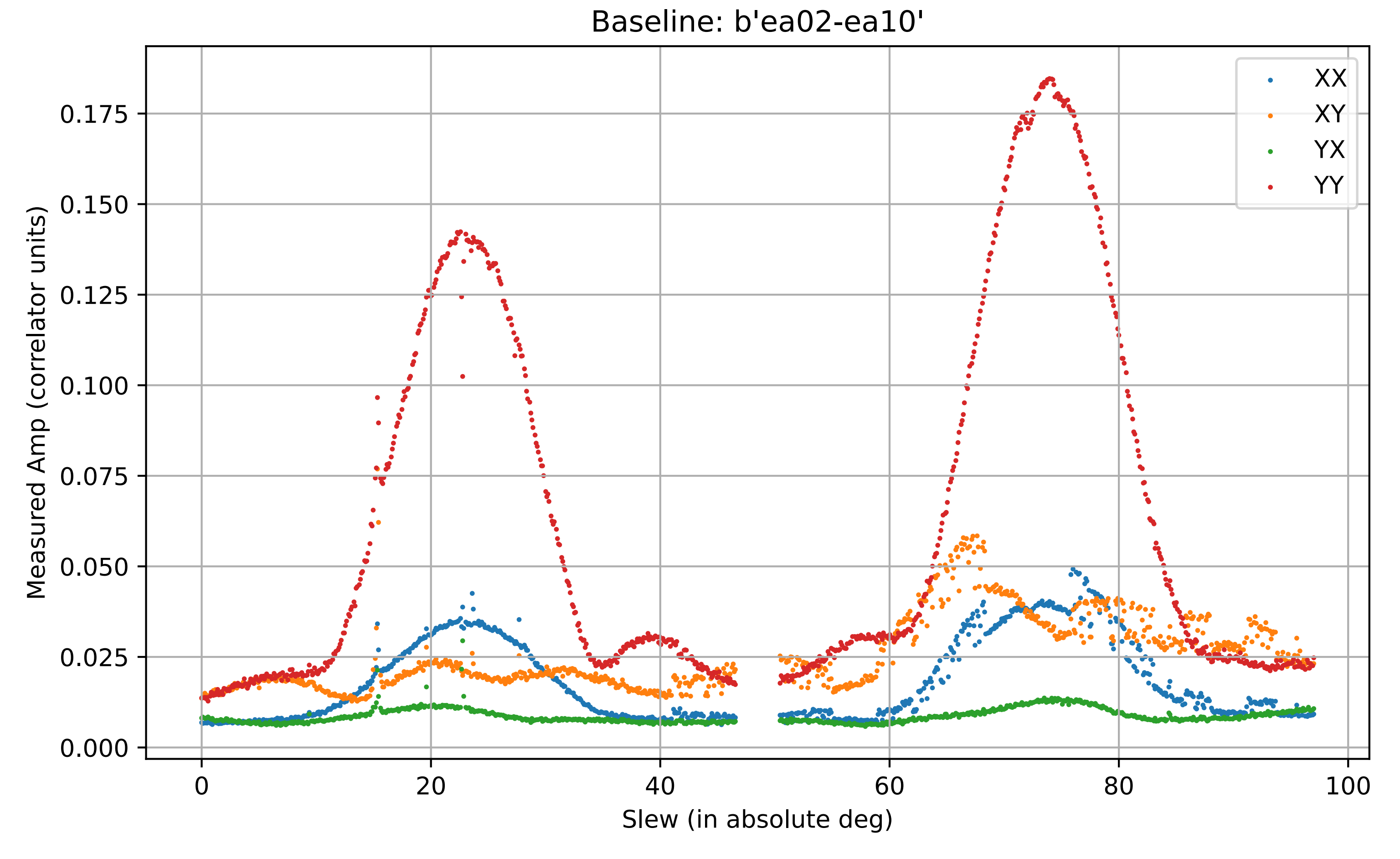

Baseline: b'ea02-ea05'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0
20
40
60
80
100

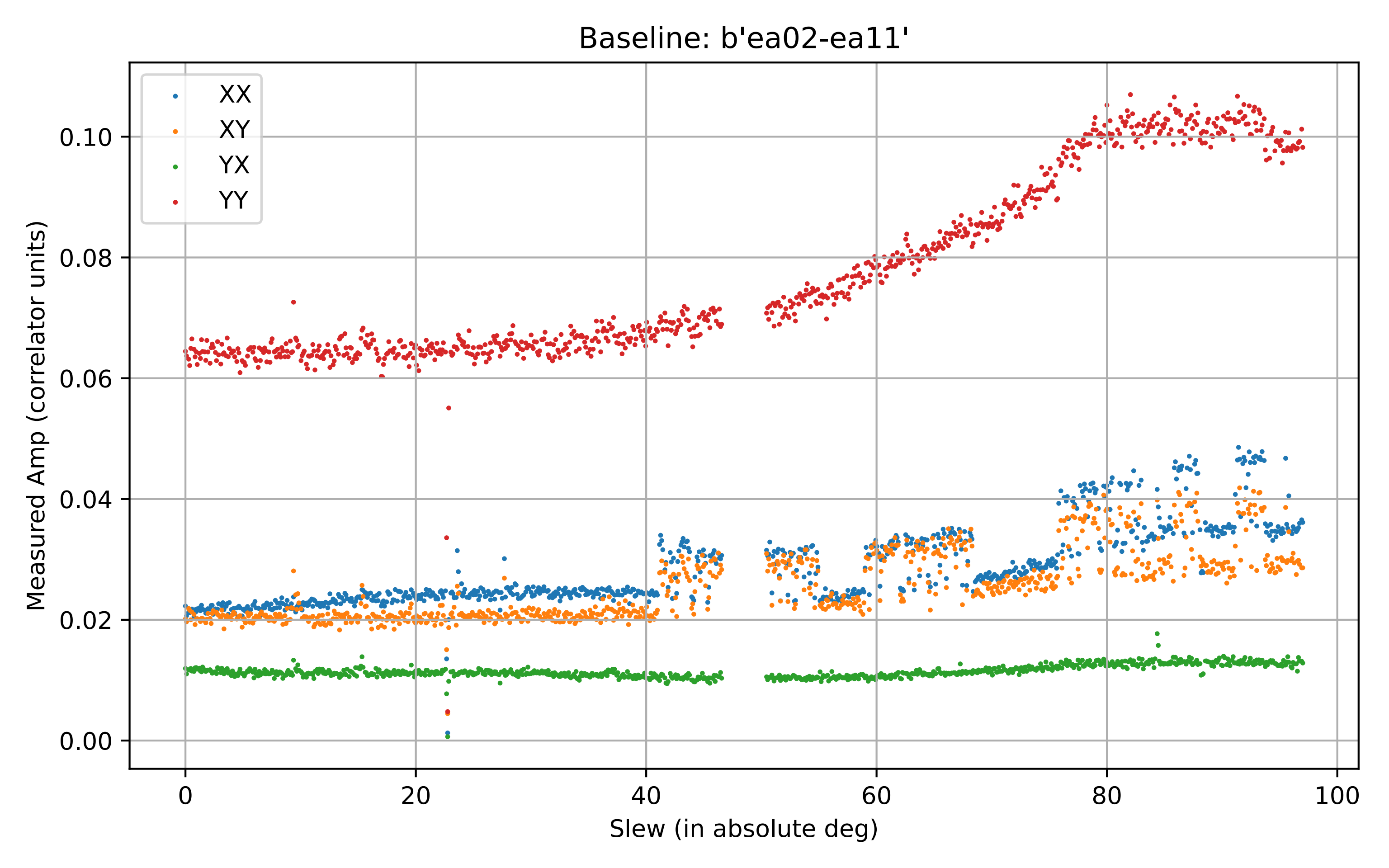

Baseline: b'ea02-ea07'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100

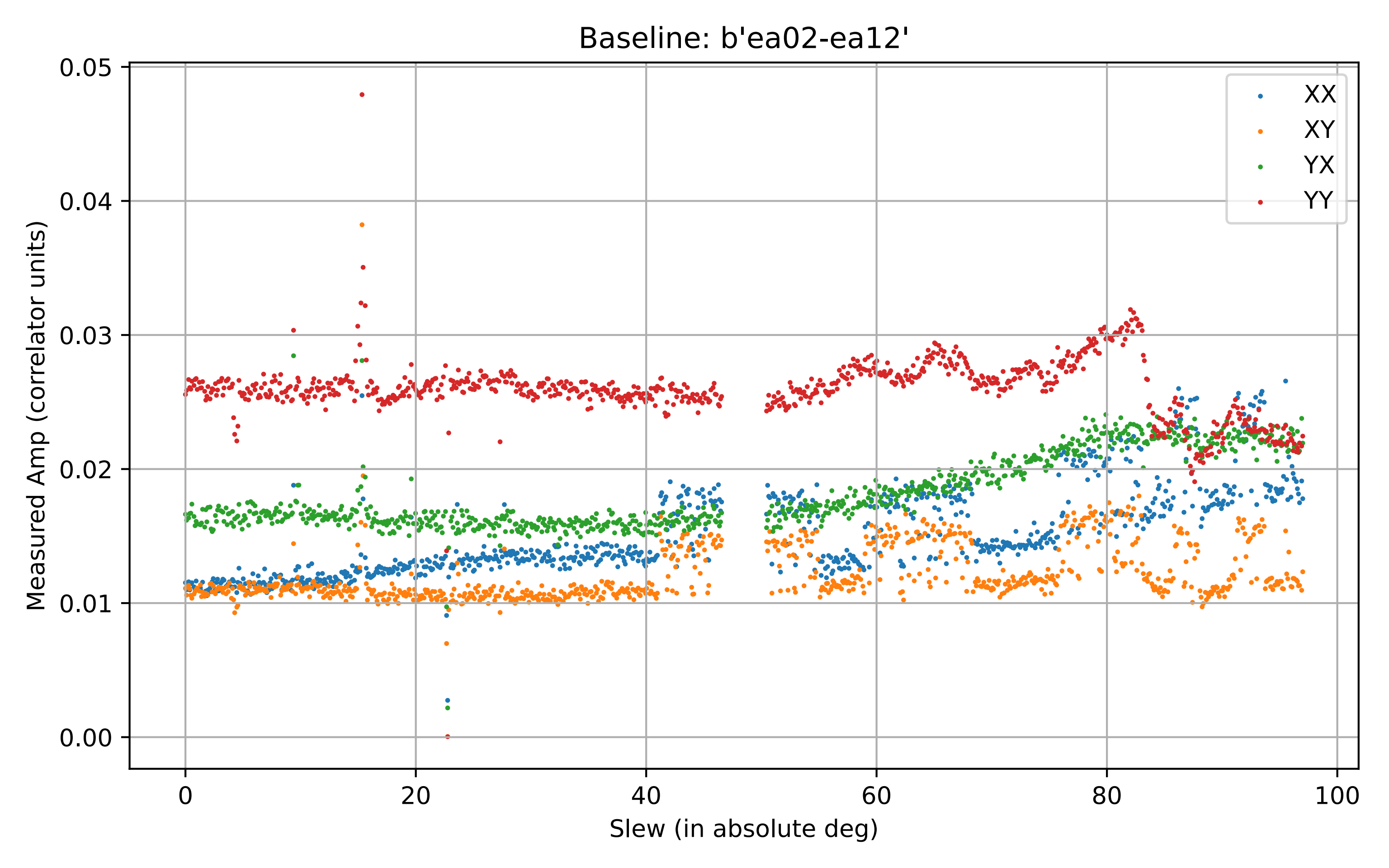

Baseline: b'ea02-ea08'
Measured Amp (correlator units)
0.01
0.02
0.03
0.04
0.05
Slew (in absolute deg)
0
20
40
60
80
100
XX
XY
YX
YY

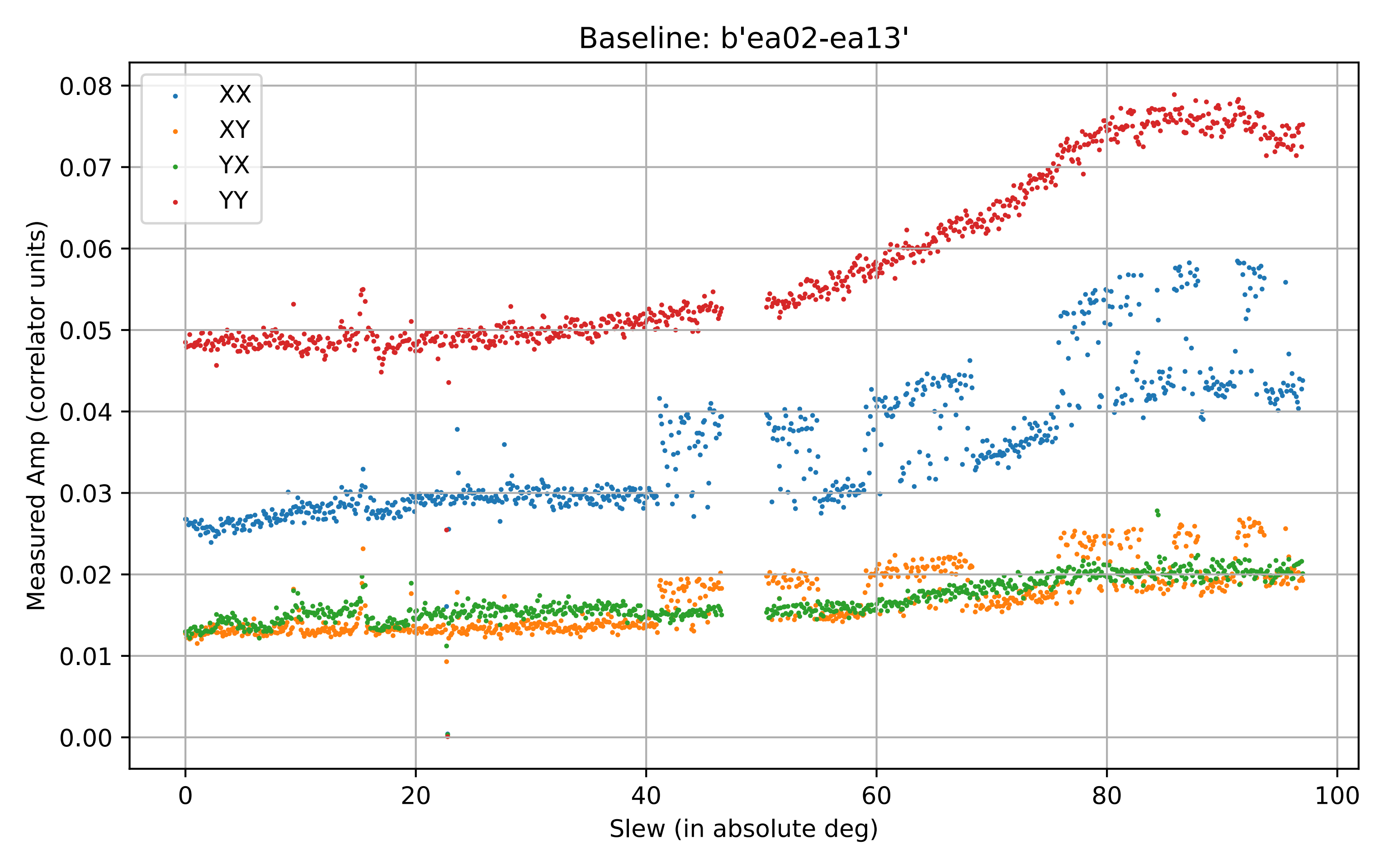


Baseline: b'ea02-ea09'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100
Slew (in absolute deg)

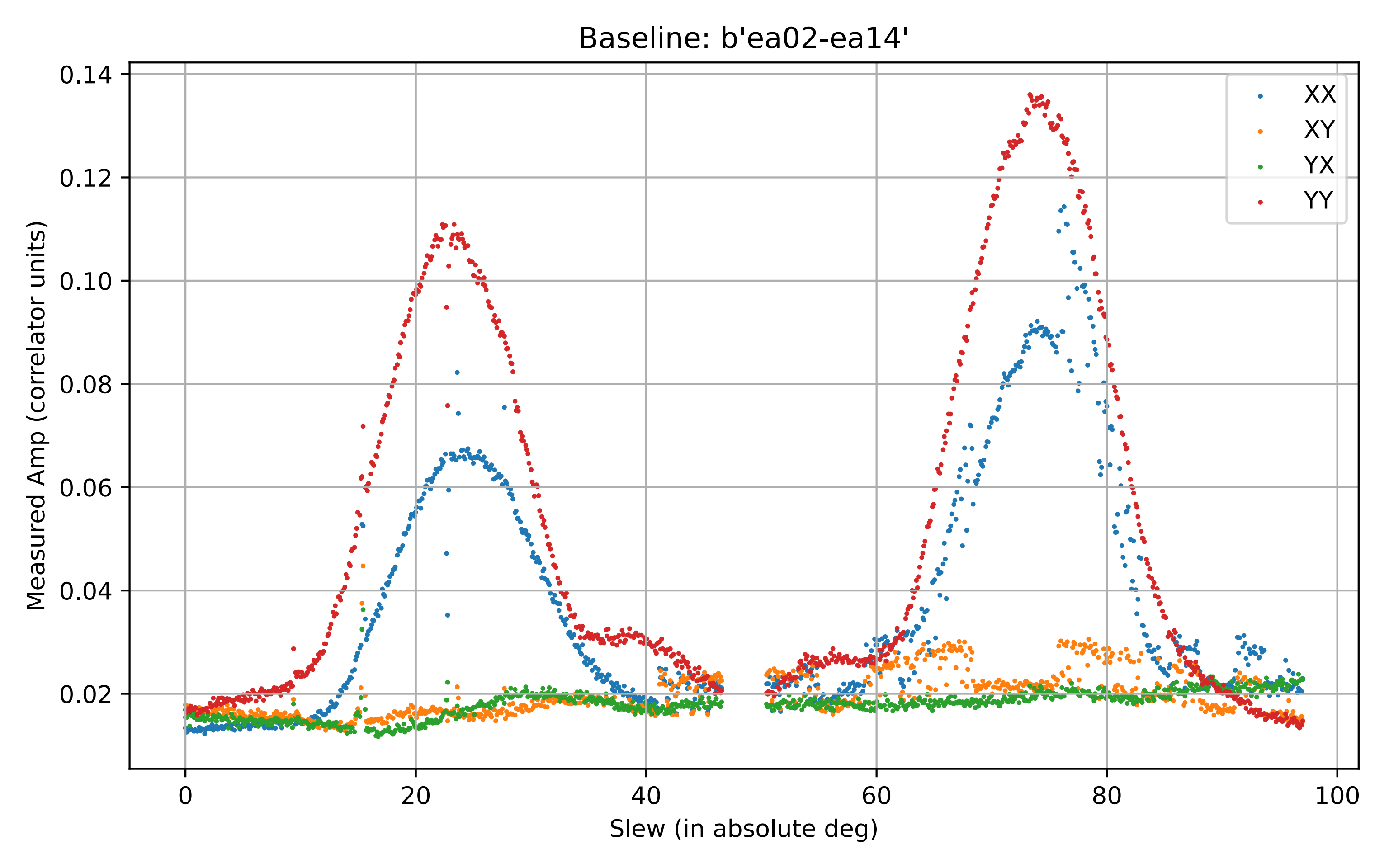

Baseline: b'ea02-ea10'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100
Slew (in absolute deg)

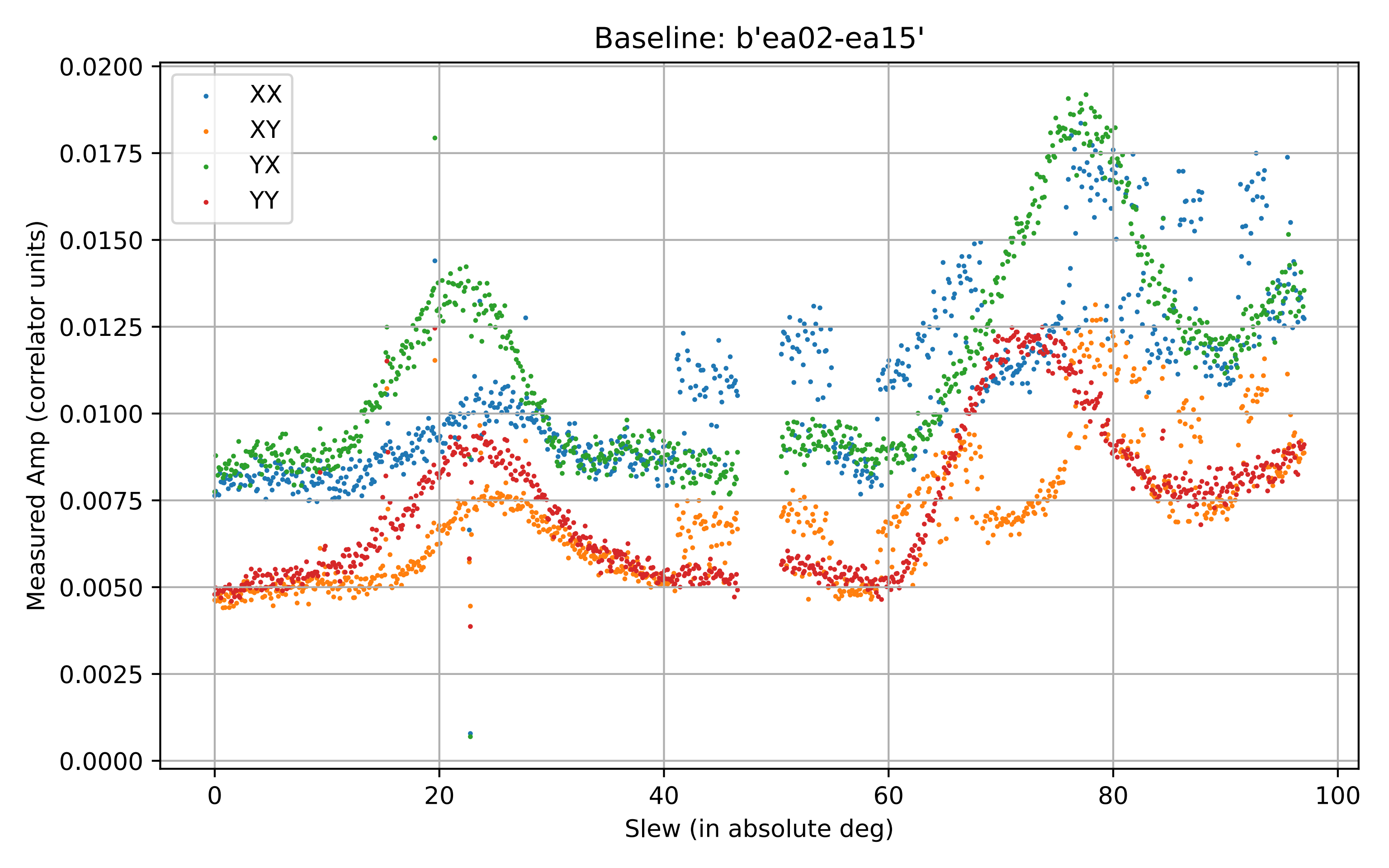

Baseline: b'ea02-ea11'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea02-ea12'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0
20
40
60
80
100

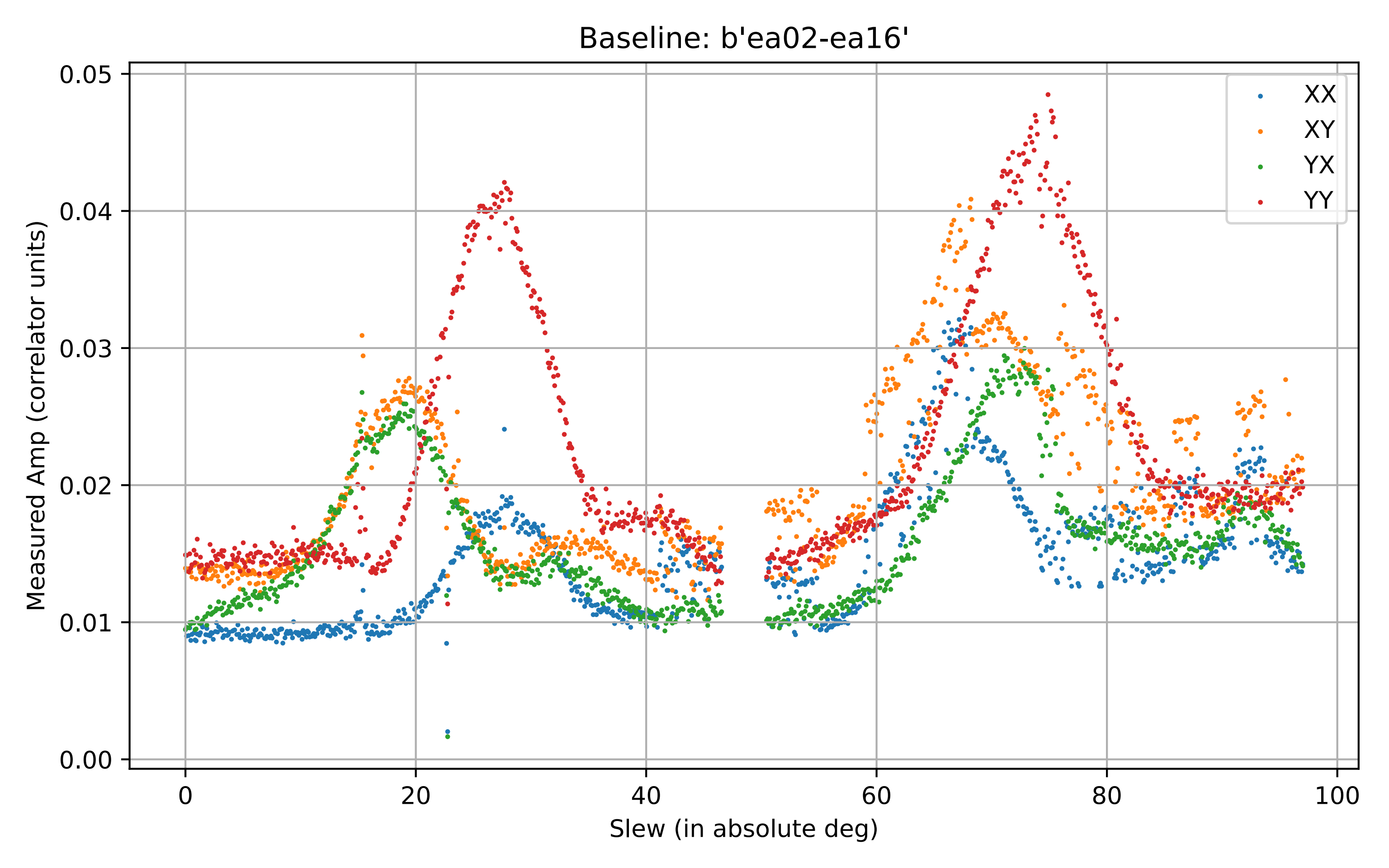


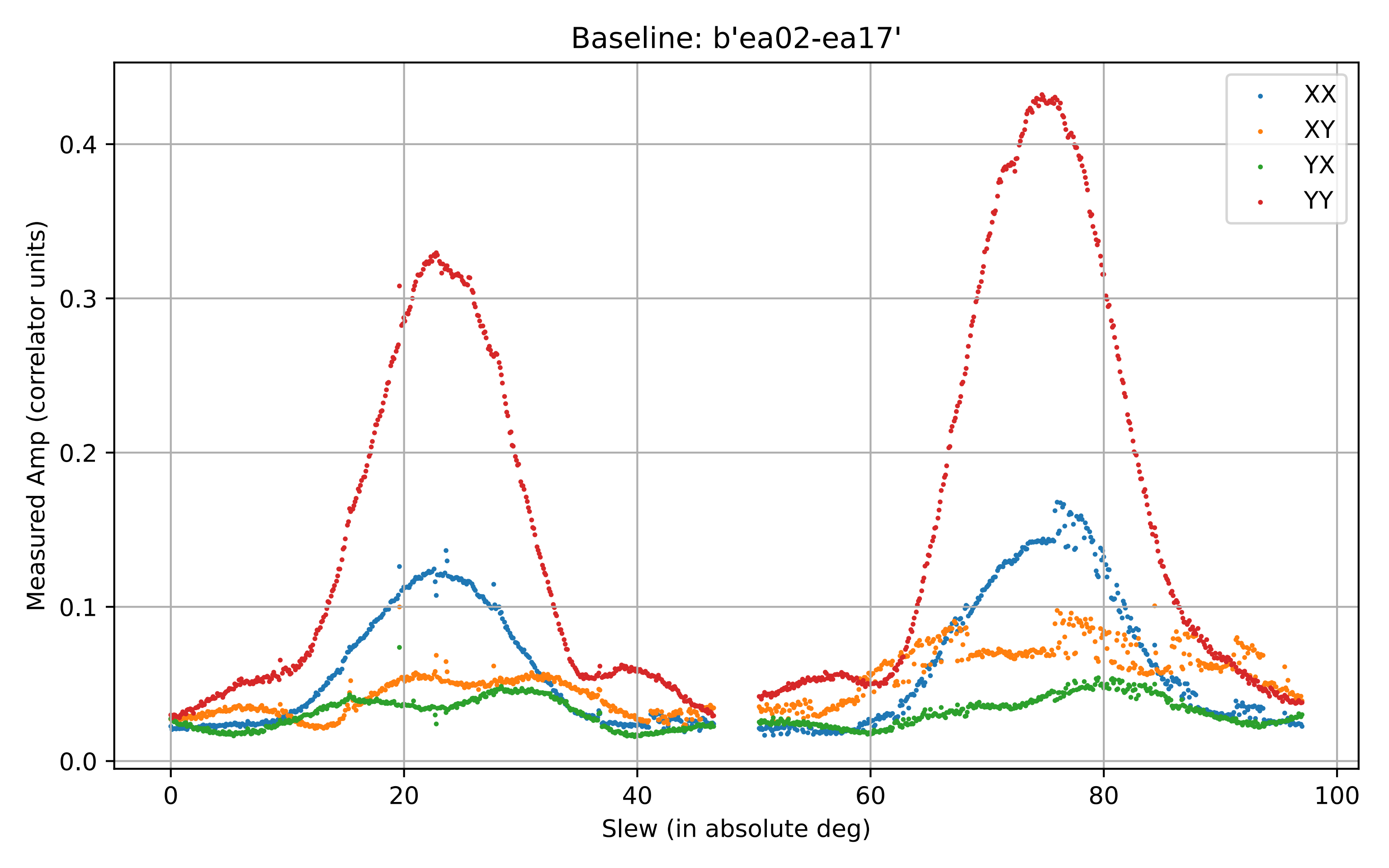
Baseline: b'ea02-ea13'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea02-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0
20
40
60
80
100
Slew (in absolute deg)

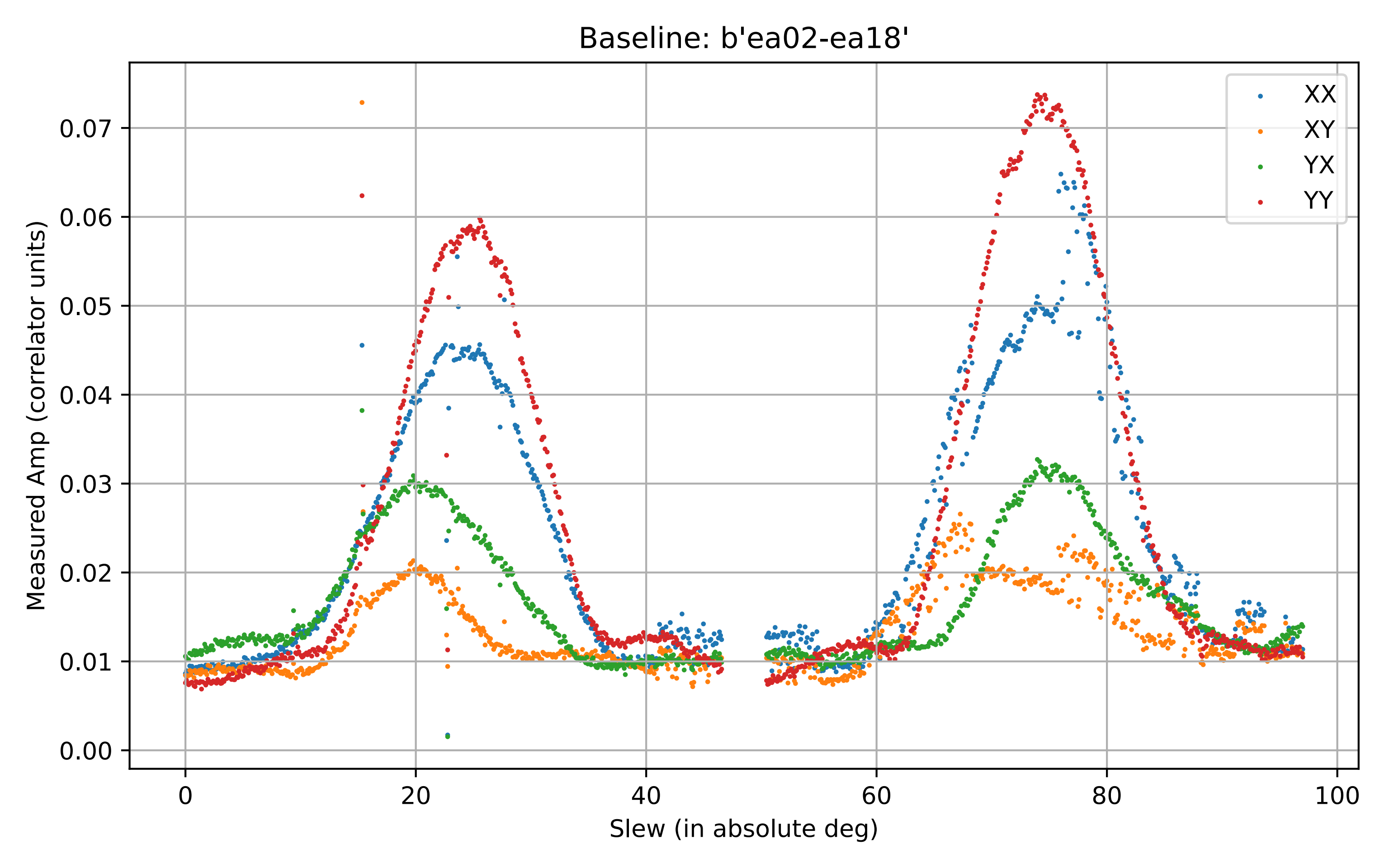


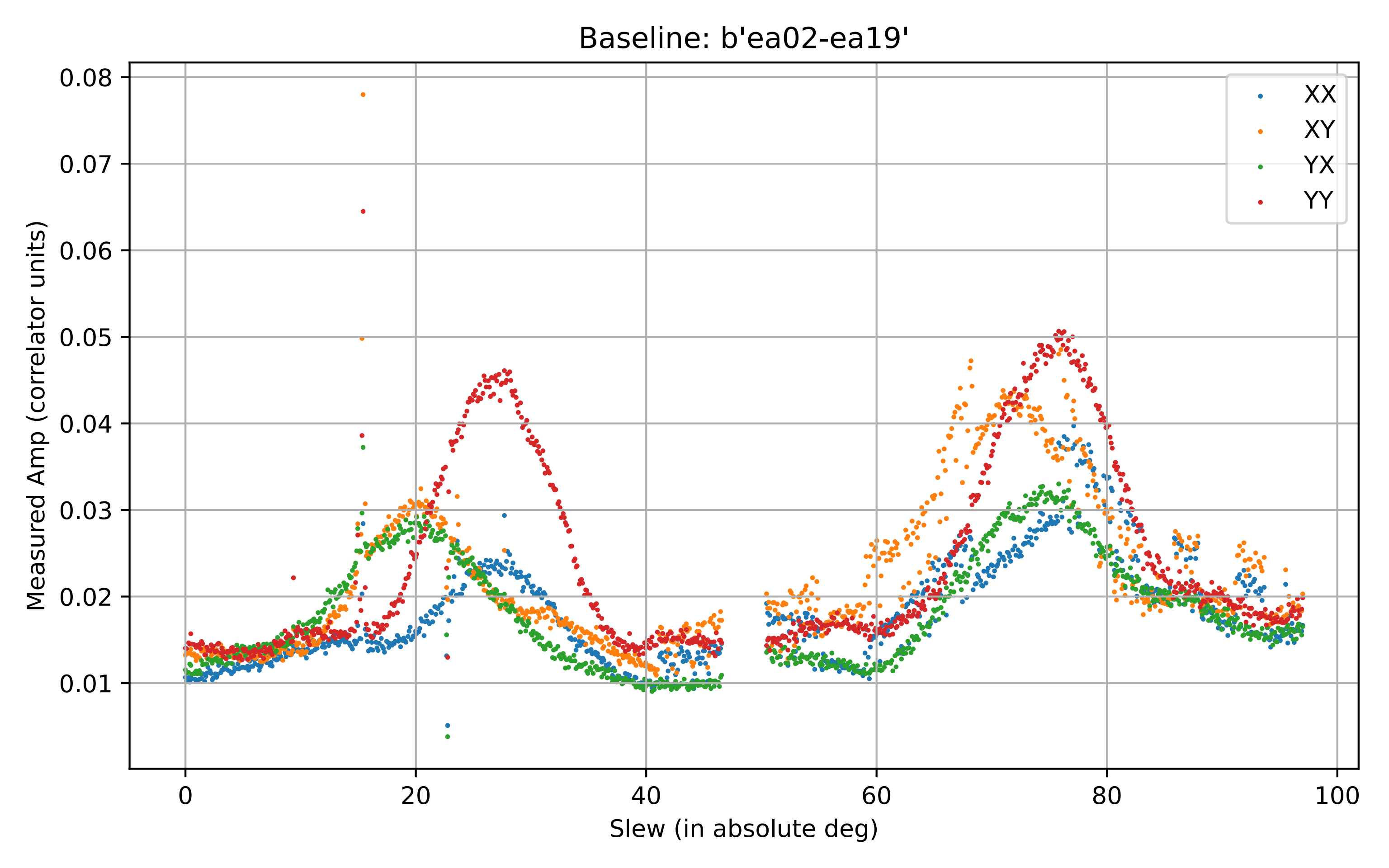
Baseline: b'ea02-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.0000
0.0025
0.0050
0.0075
0.0100
0.0125
0.0150
0.0175
0.0200
0
20
40
60
80
100


Baseline: b'ea02-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0
20
40
60
80
100

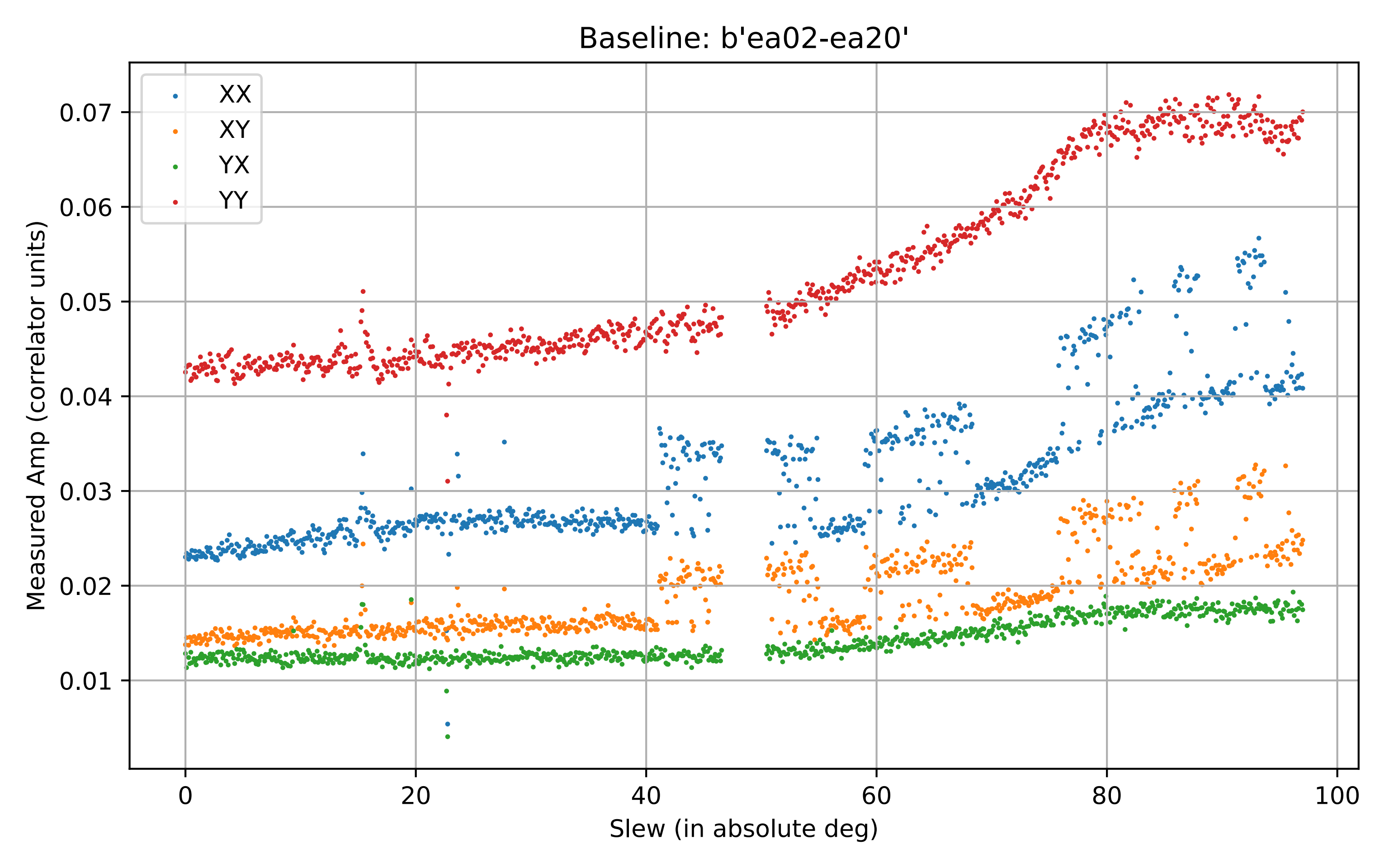


Baseline: b'ea02-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100

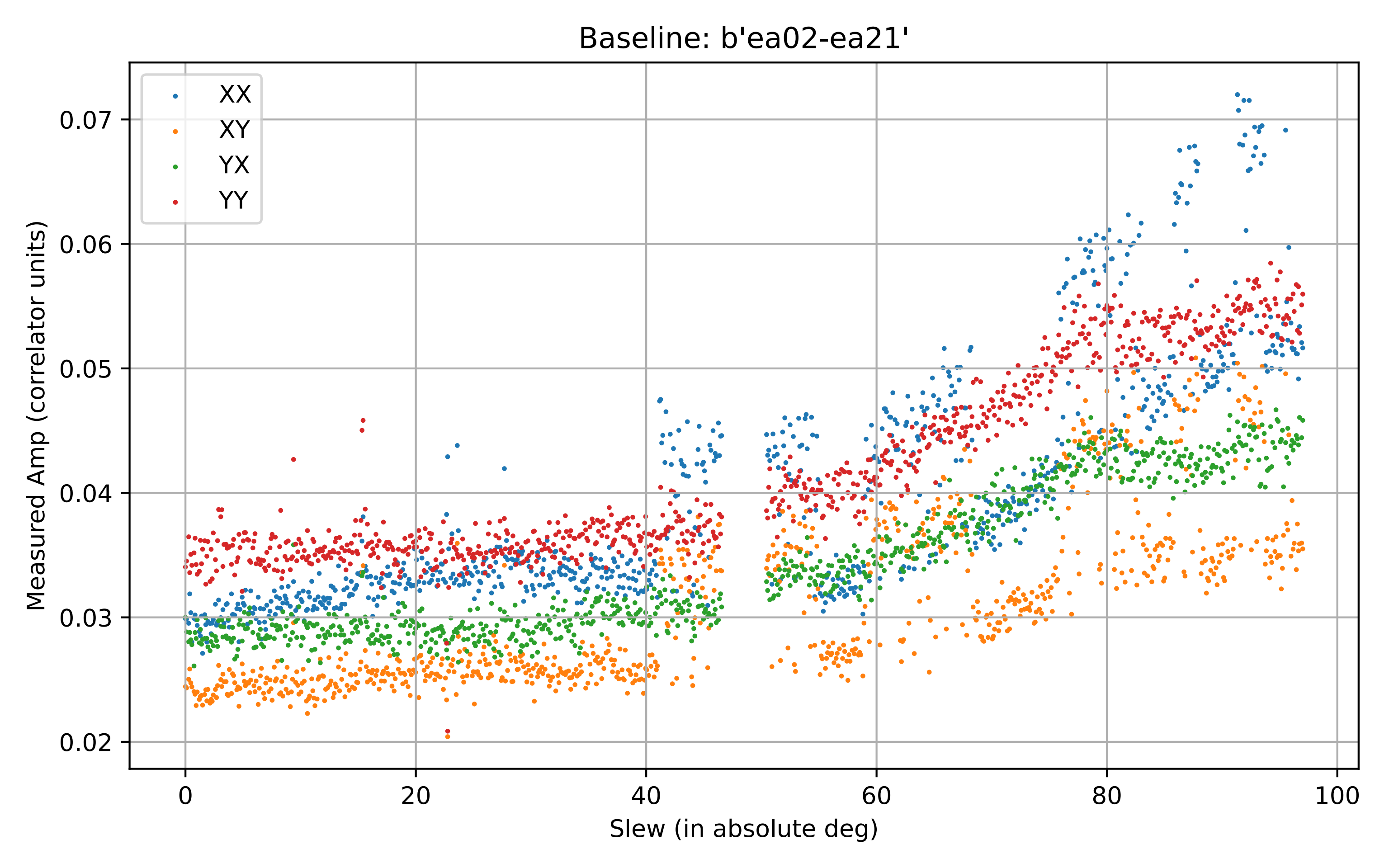

Baseline: b'ea02-ea18'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0
20
40
60
80
100



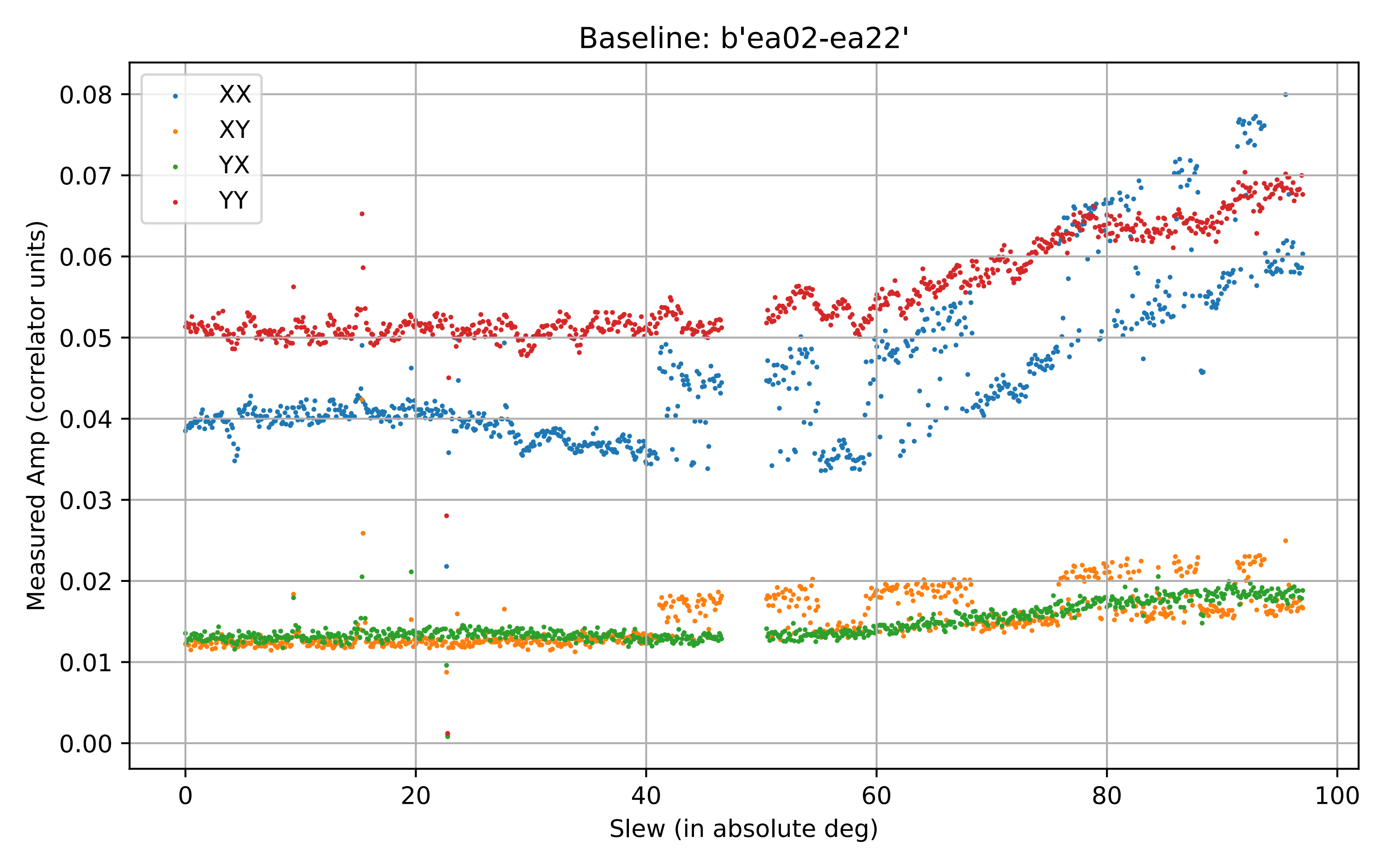
Baseline: b'ea02-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
20
40
60
80
100

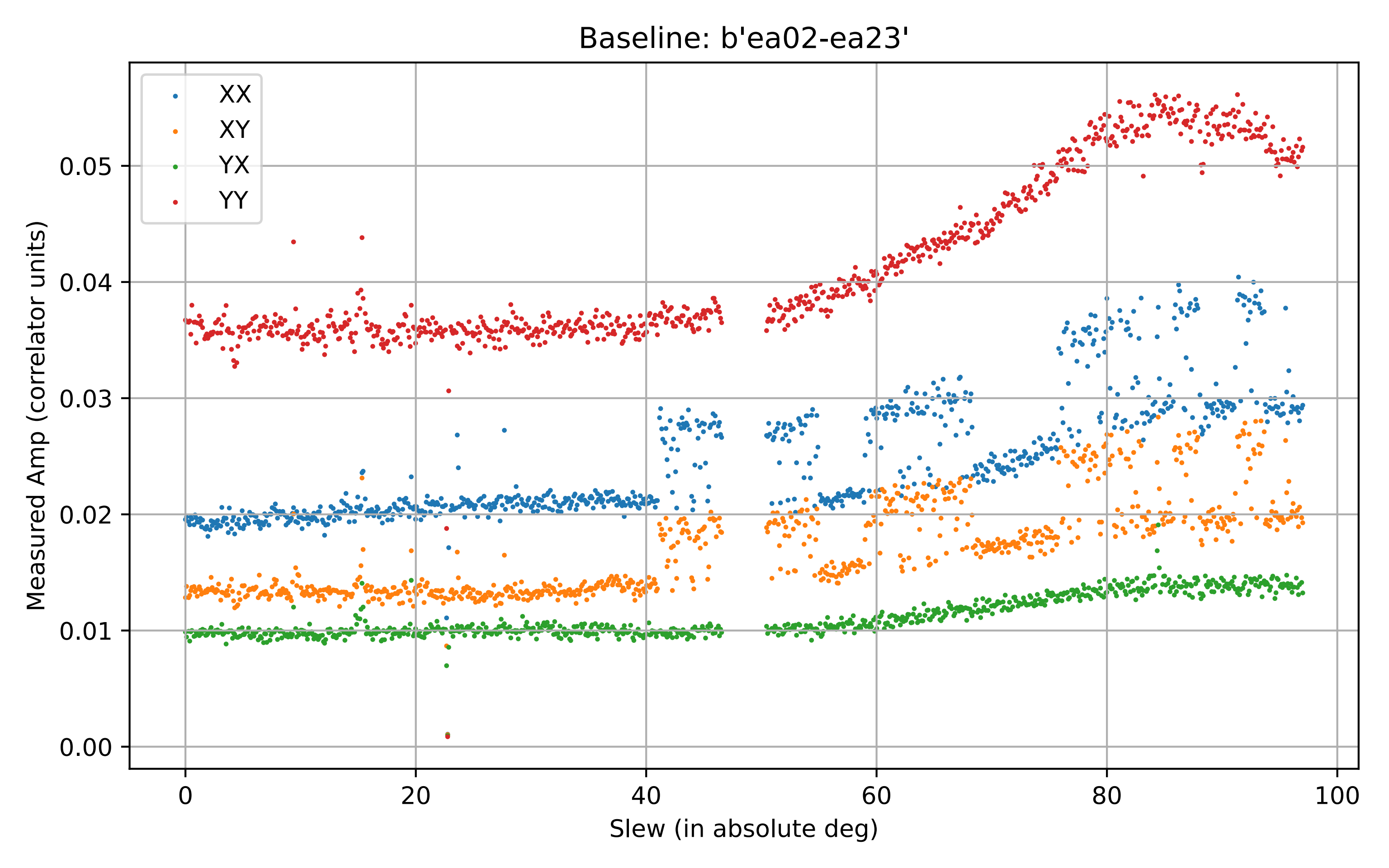


Baseline: b'ea02-ea20'
XX
XY
YX
YY
Measured Amp (correlator units)
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
20
40
60
80
100
Slew (in absolute deg)

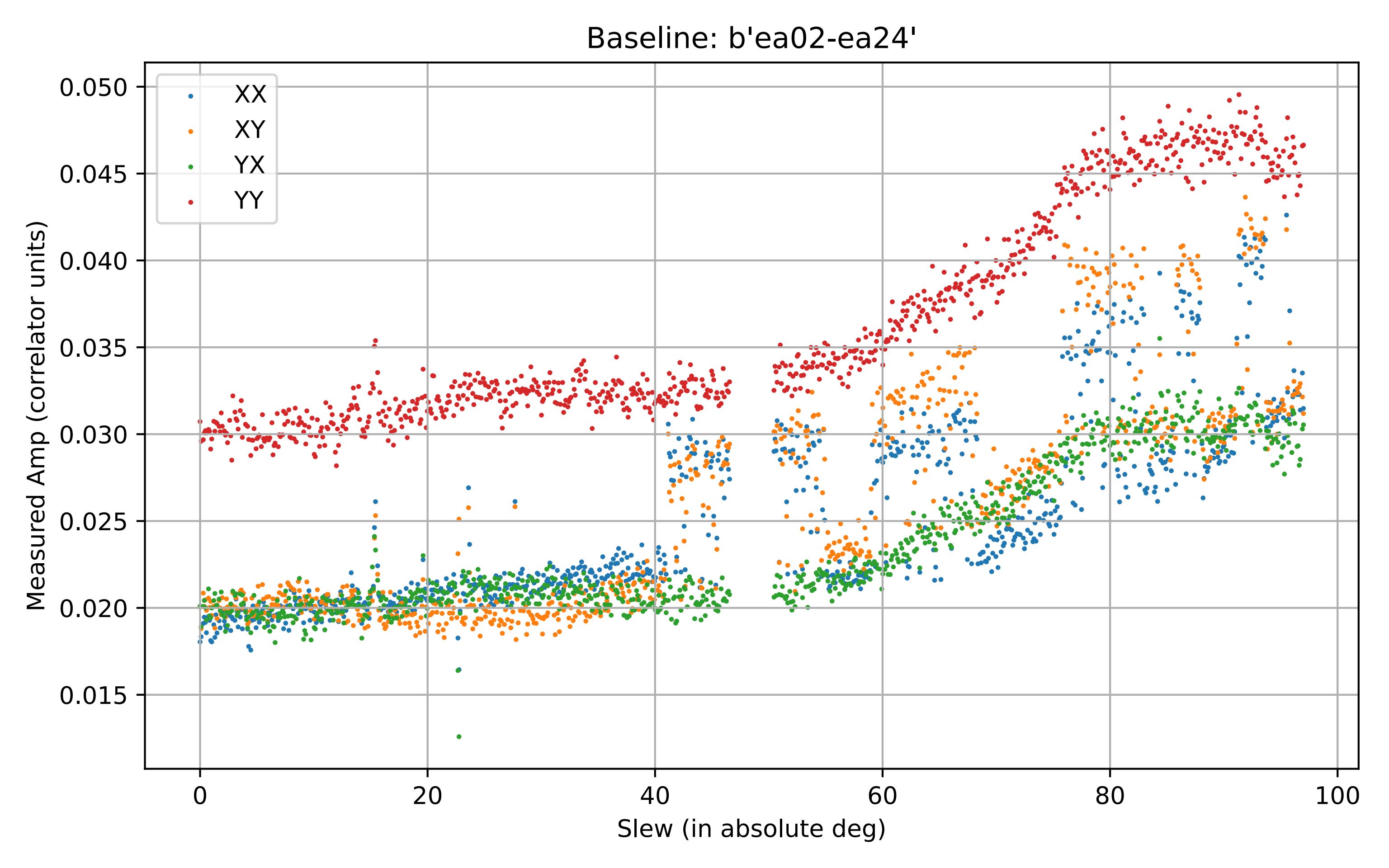


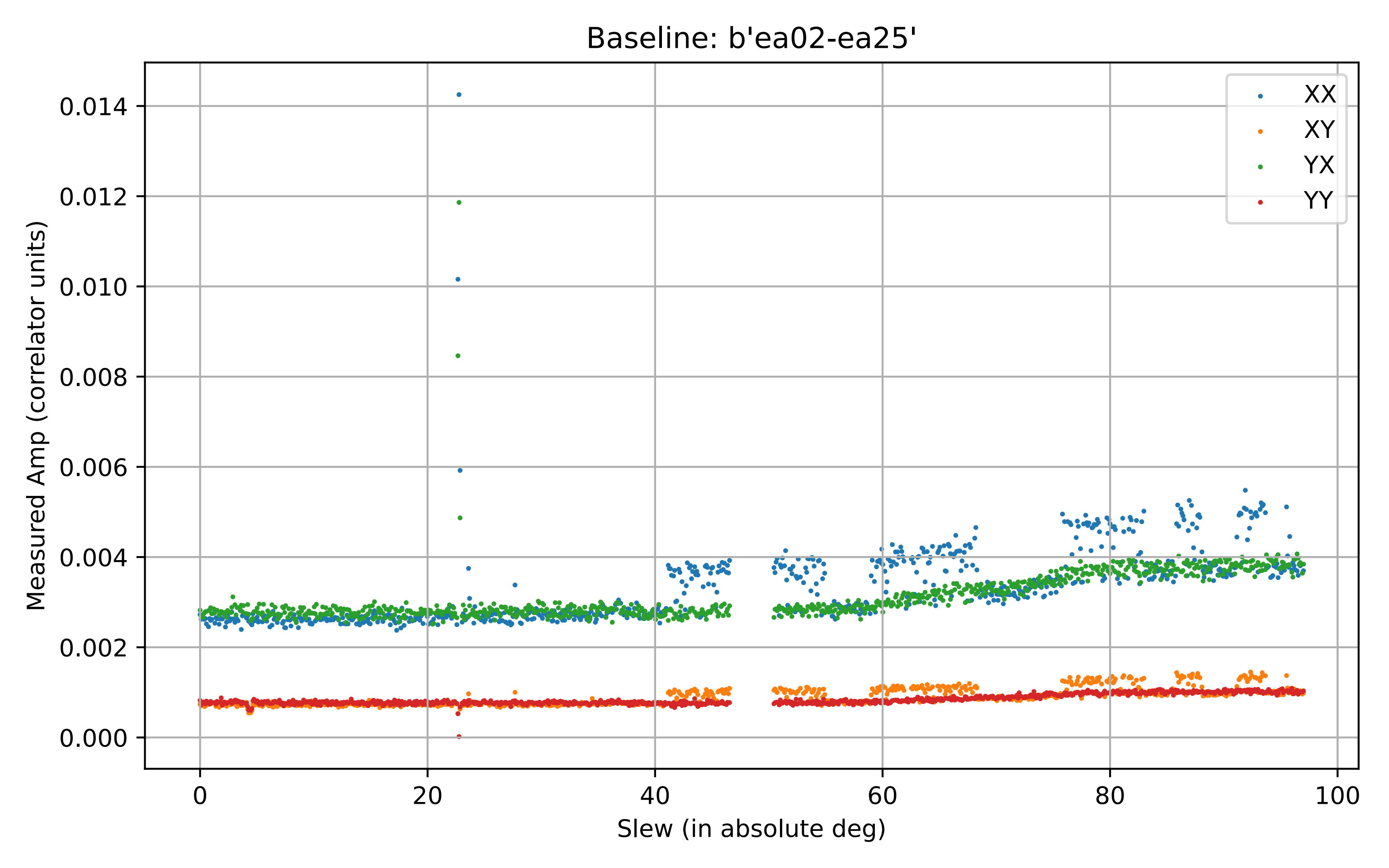
Baseline: b'ea02-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
0.02
0.03
0.04
0.05
0.06
0.07
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea02-ea22'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0
20
40
60
80
100
Slew (in absolute deg)

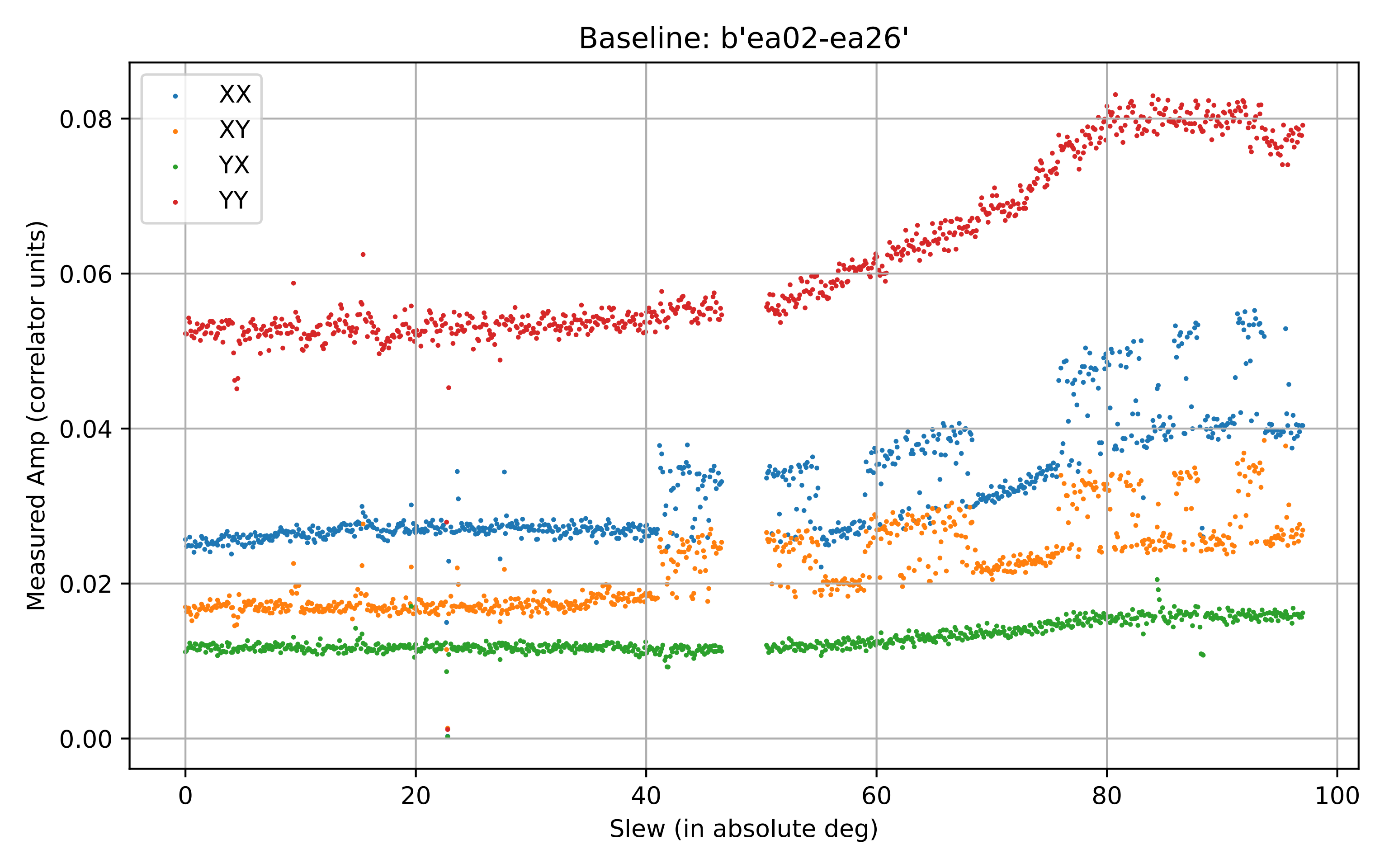


Baseline: b'ea02-ea23'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0
20
40
60
80
100
Slew (in absolute deg)

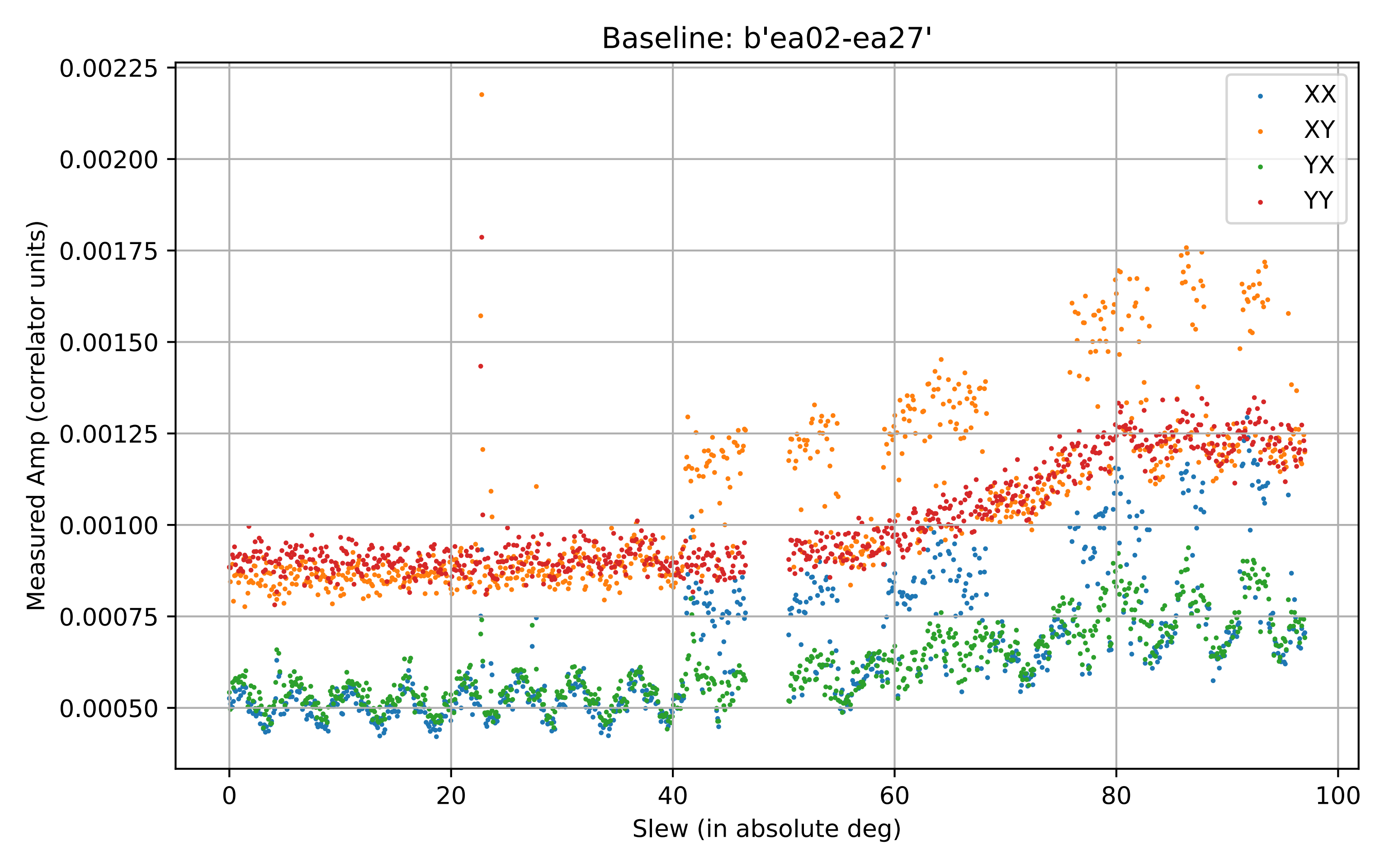

Baseline: b'ea02-ea24'
XX
XY
YX
YY
Measured Amp (correlator units)
0.050
0.045
0.040
0.035
0.030
0.025
0.020
0.015
0
20
40
60
80
100
Slew (in absolute deg)

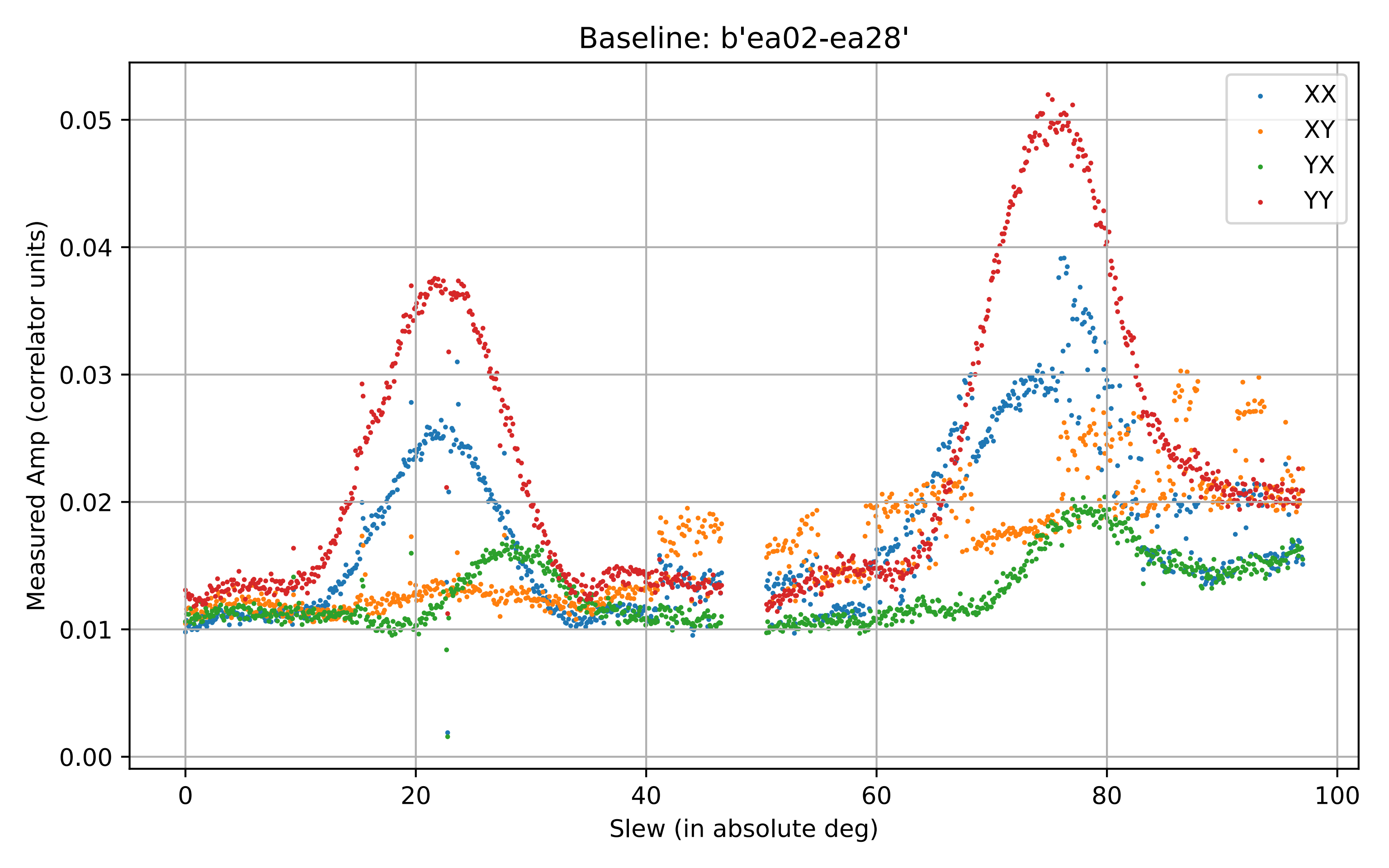


Baseline: b'ea02-ea25'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.002
0.004
0.006
0.008
0.010
0.012
0.014
0
20
40
60
80
100

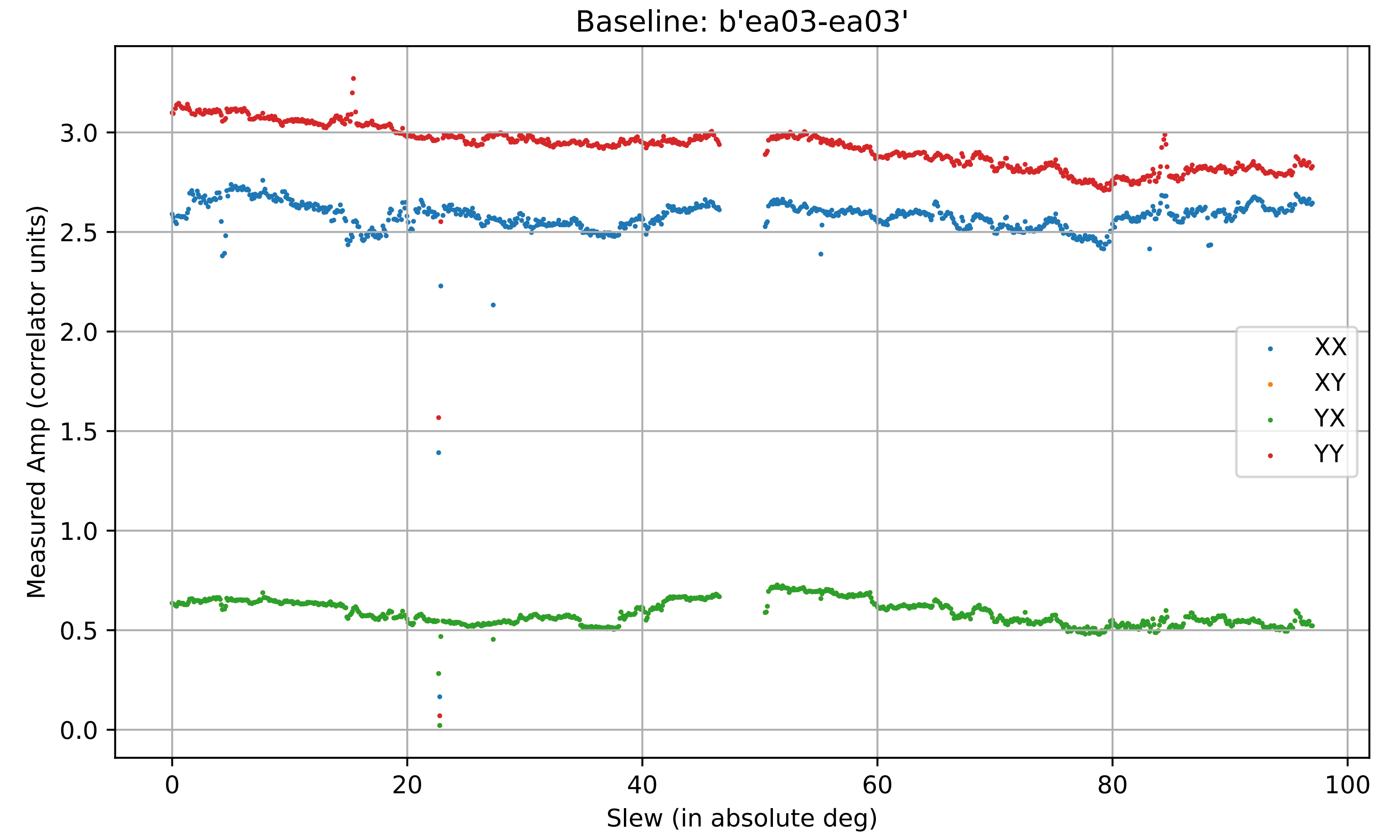


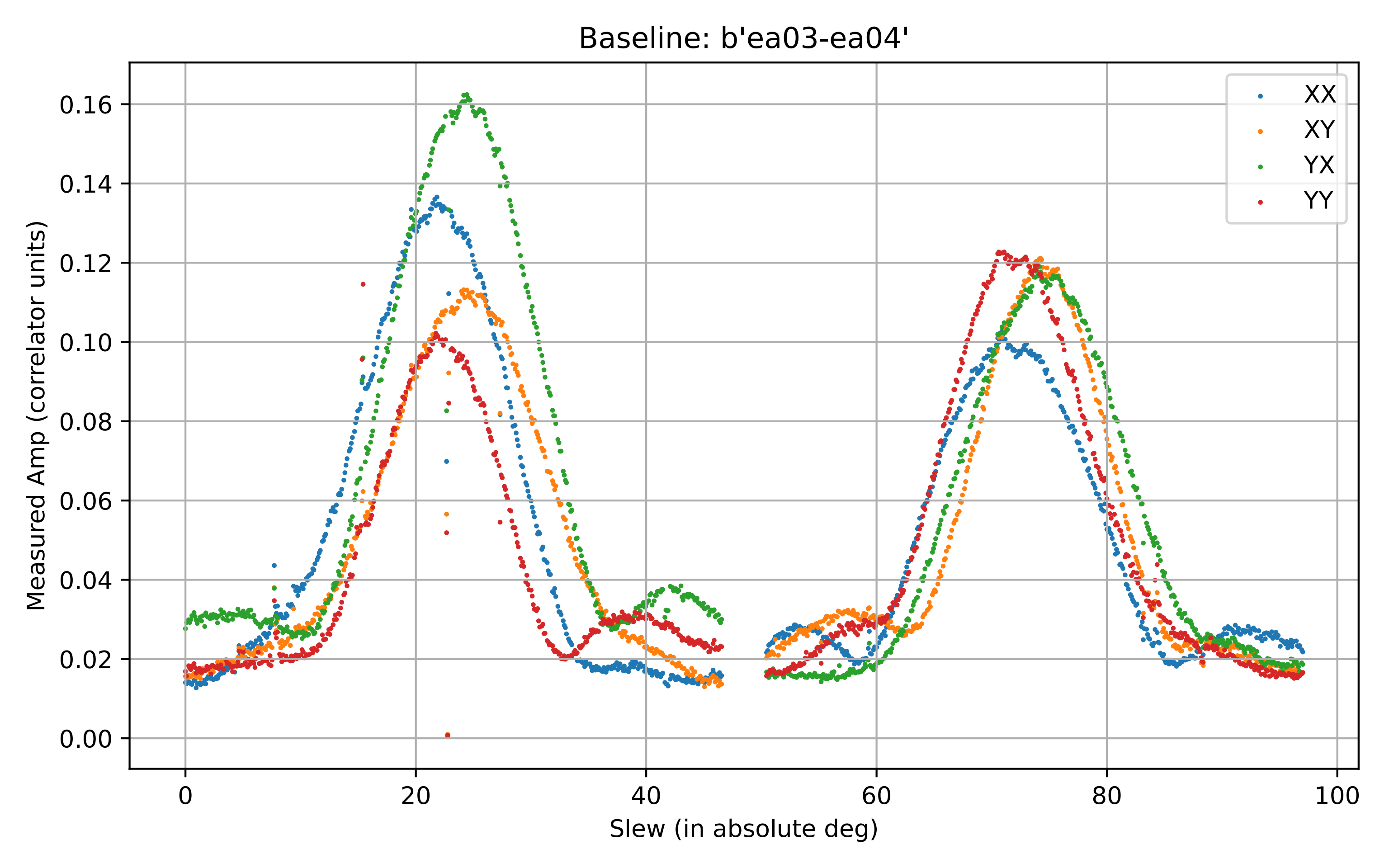
Baseline: b'ea02-ea26'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea02-ea27'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00225
0.00200
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0
20
40
60
80
100

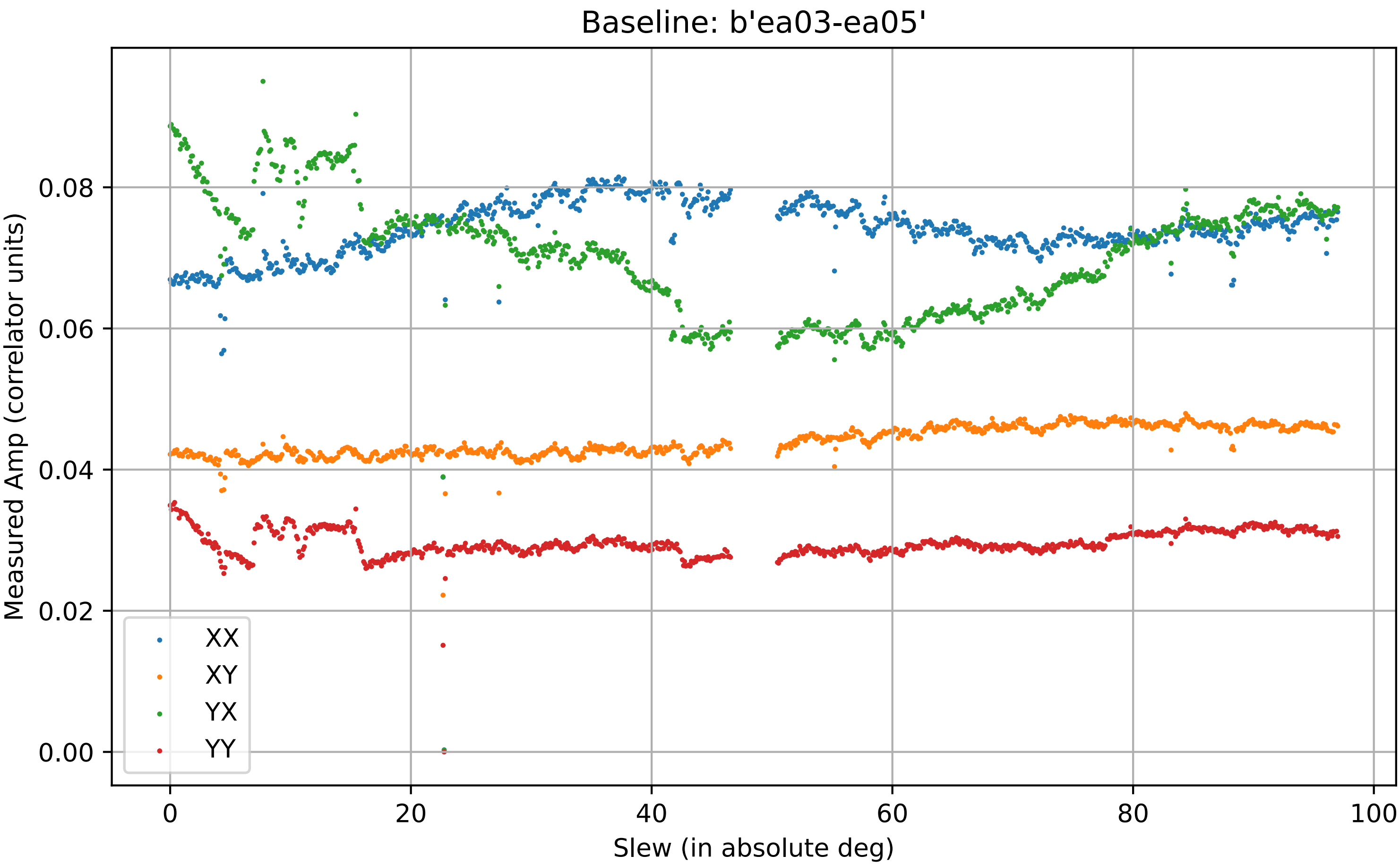


Baseline: b'ea02-ea28'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
Slew (in absolute deg)
0
20
40
60
80
100

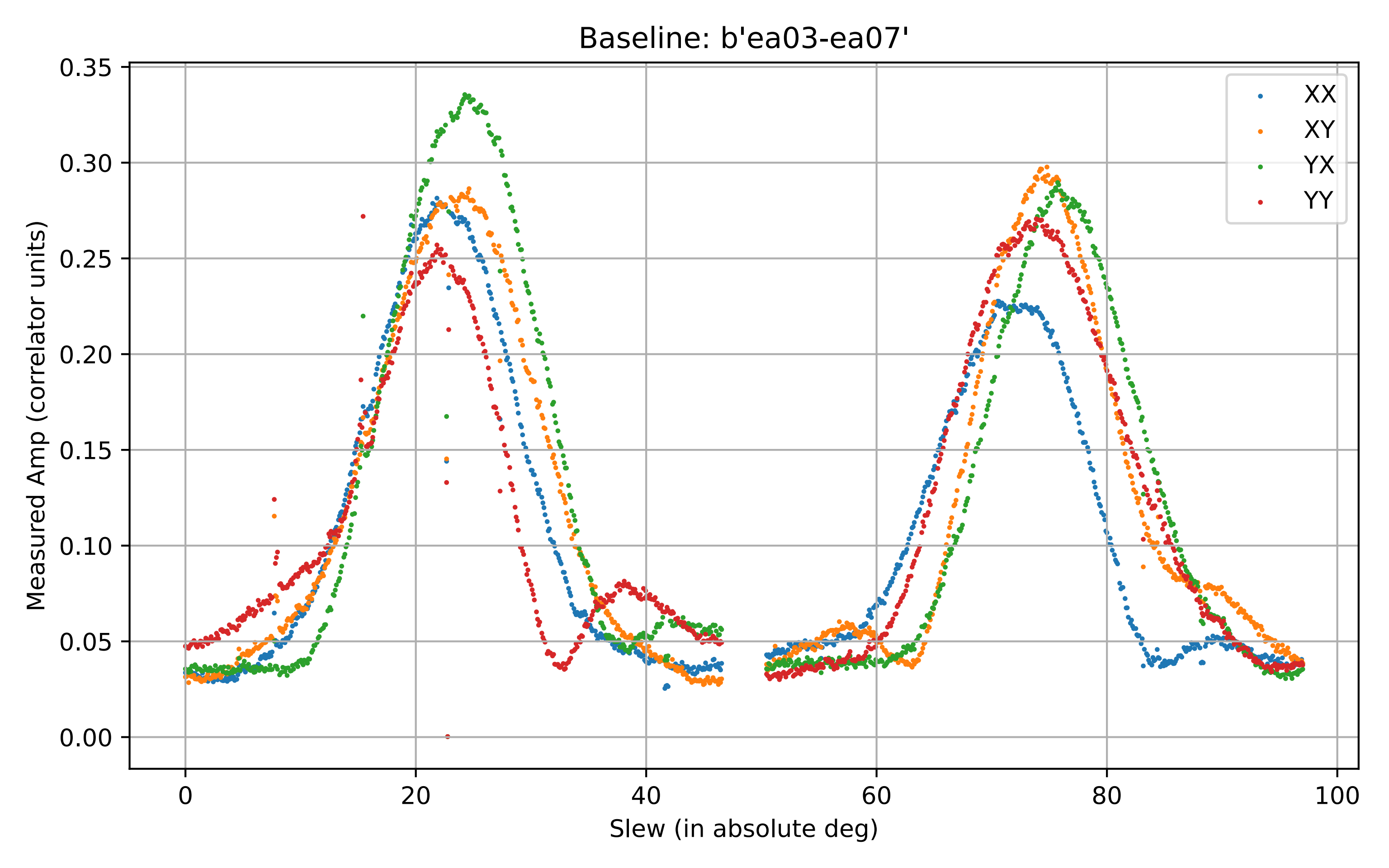

Baseline: b'ea03-ea03'
Measured Amp (correlator units)
Slew (in absolute deg)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
0
20
40
60
80
100
XX
XY
YX
YY



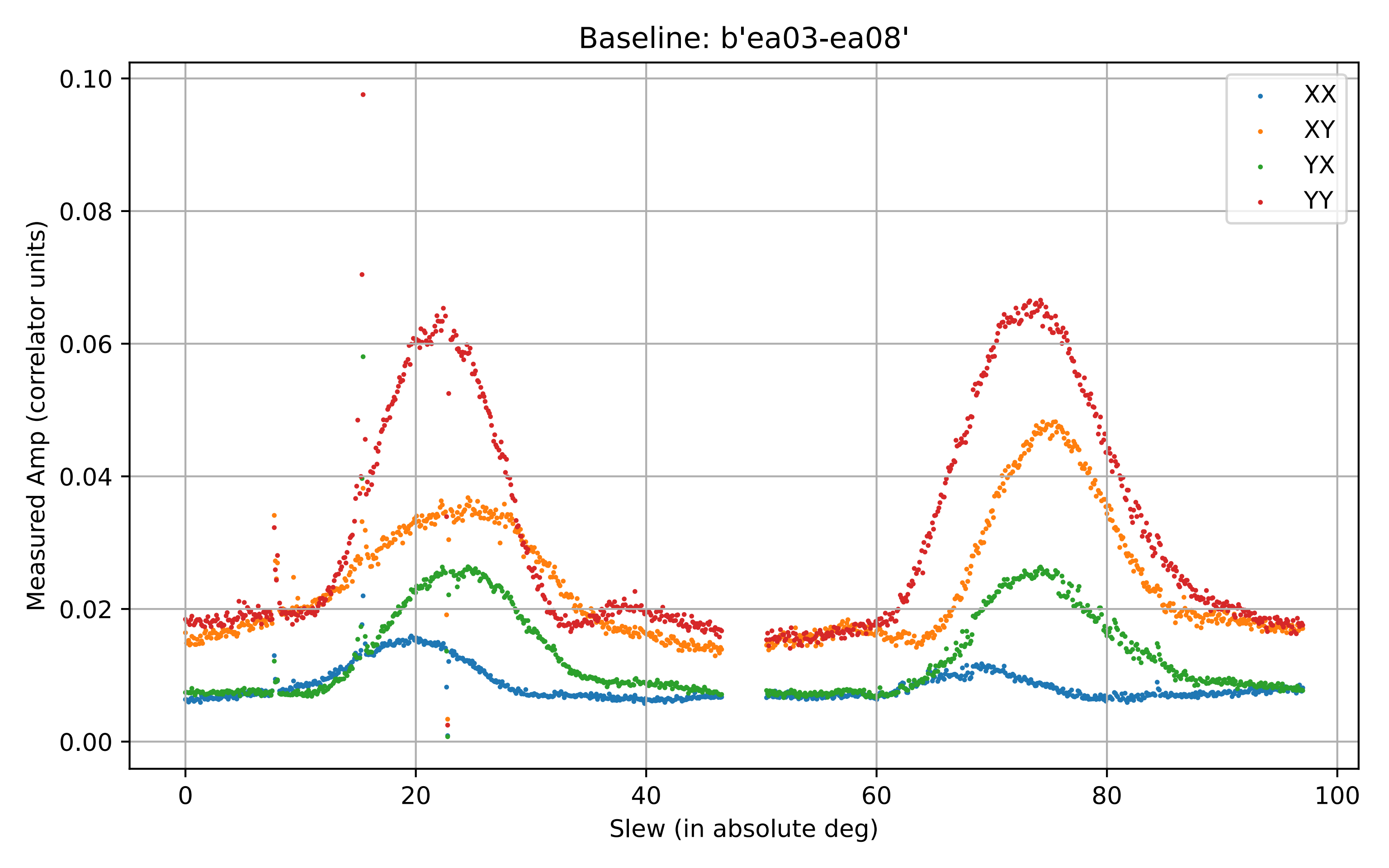
Baseline: b'ea03-ea04'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100

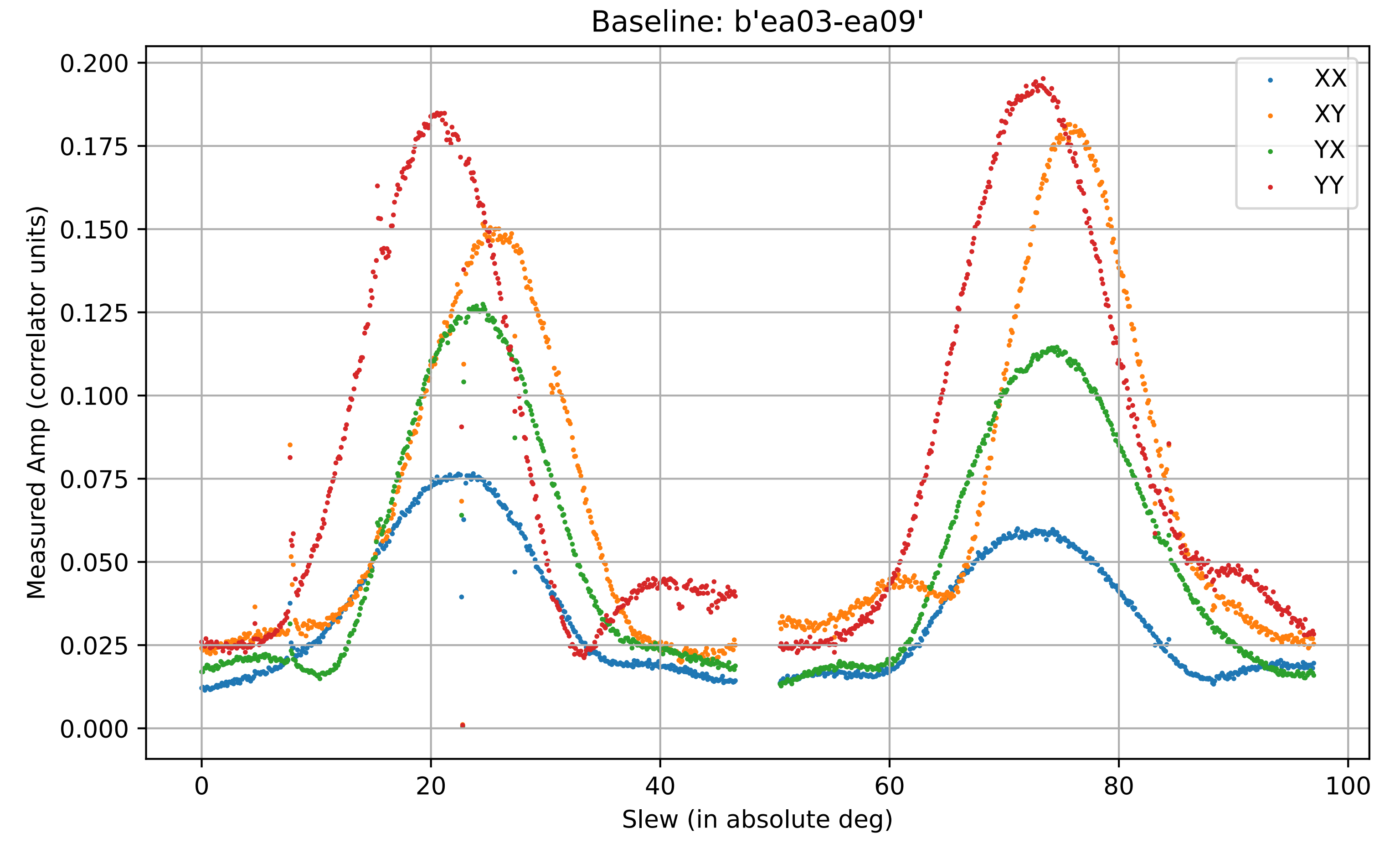


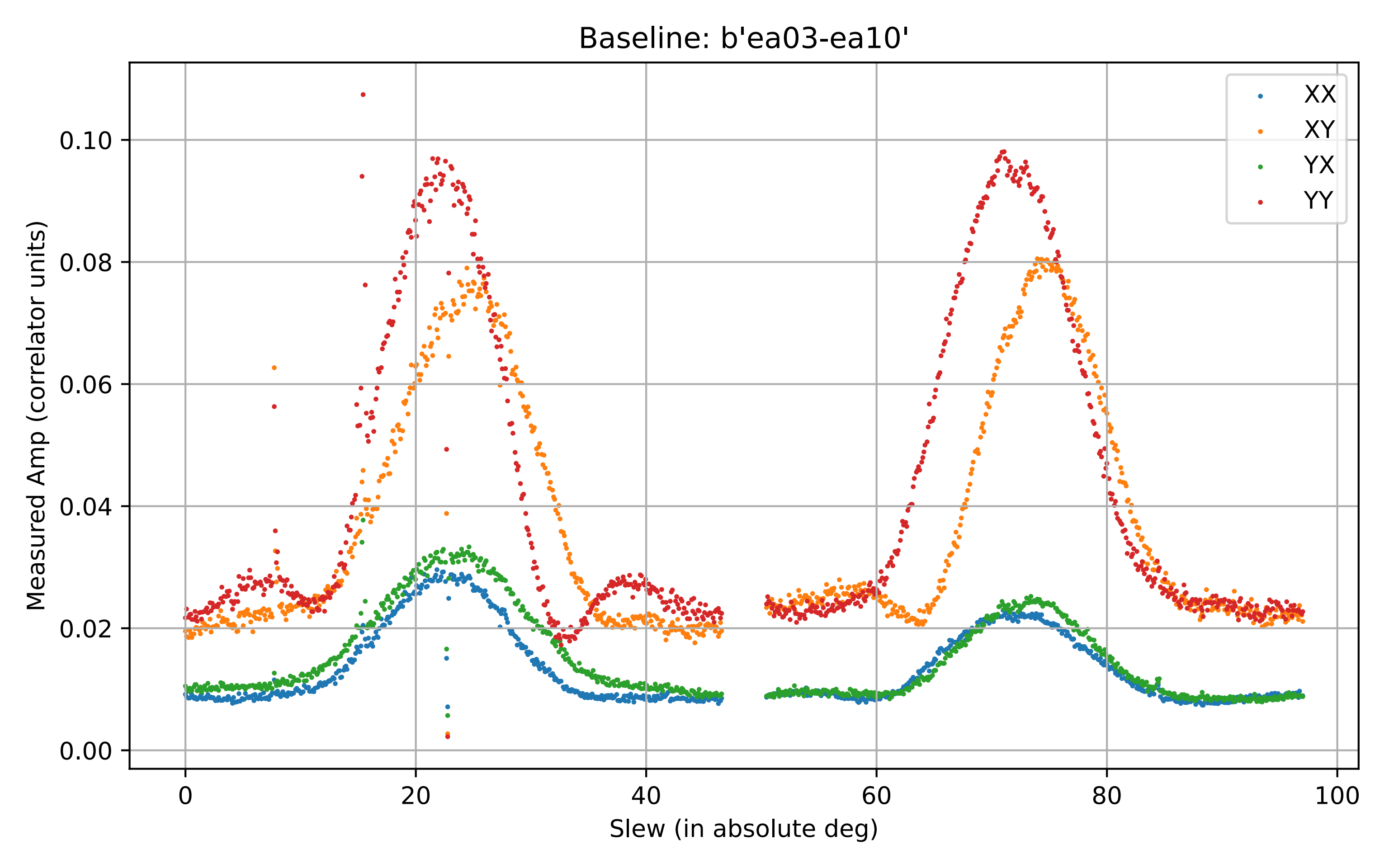
Baseline: b'ea03-ea05'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
XX
XY
YX
YY



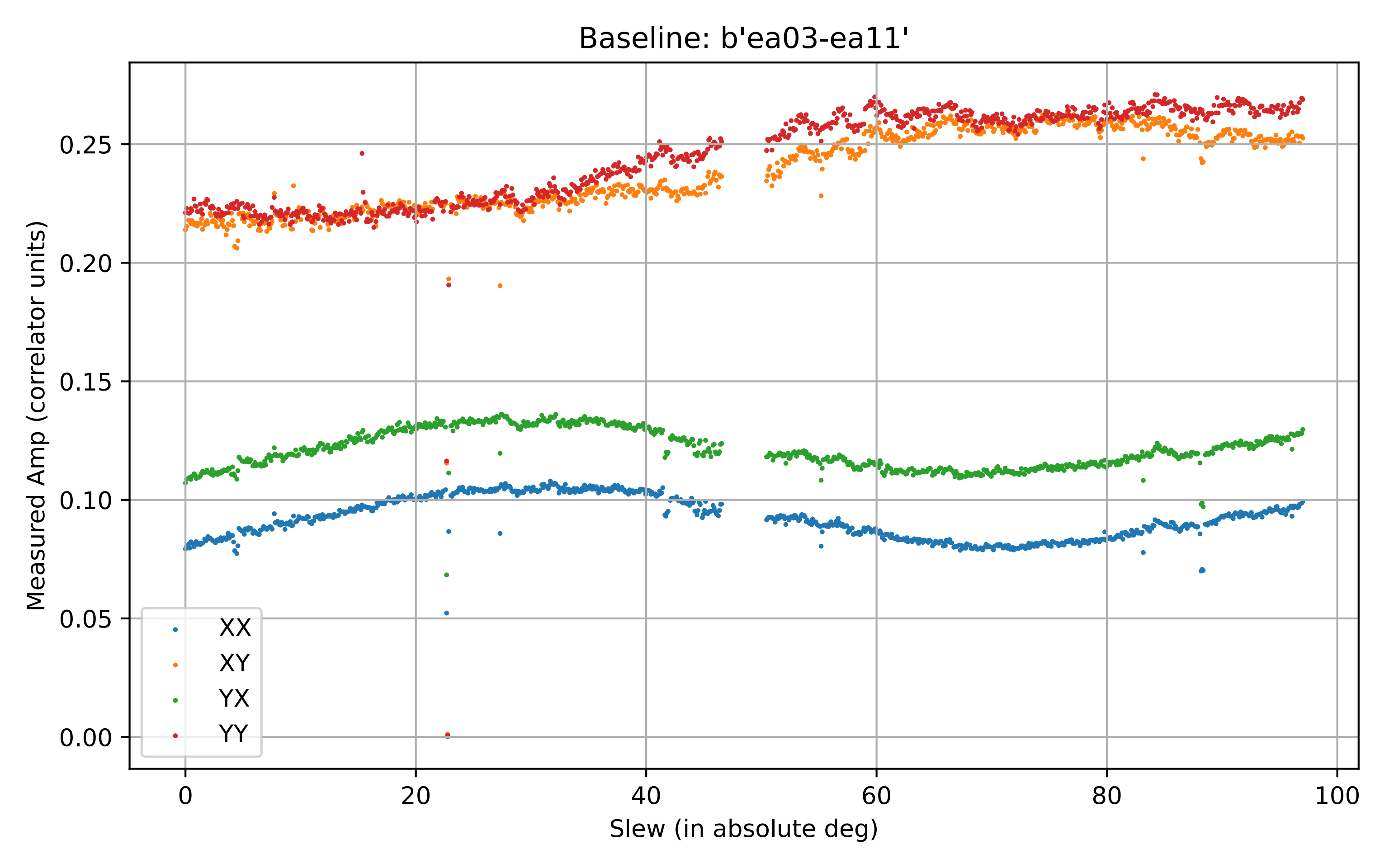
Baseline: b'ea03-ea07'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100


Baseline: b'ea03-ea08'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
Slew (in absolute deg)
0
20
40
60
80
100

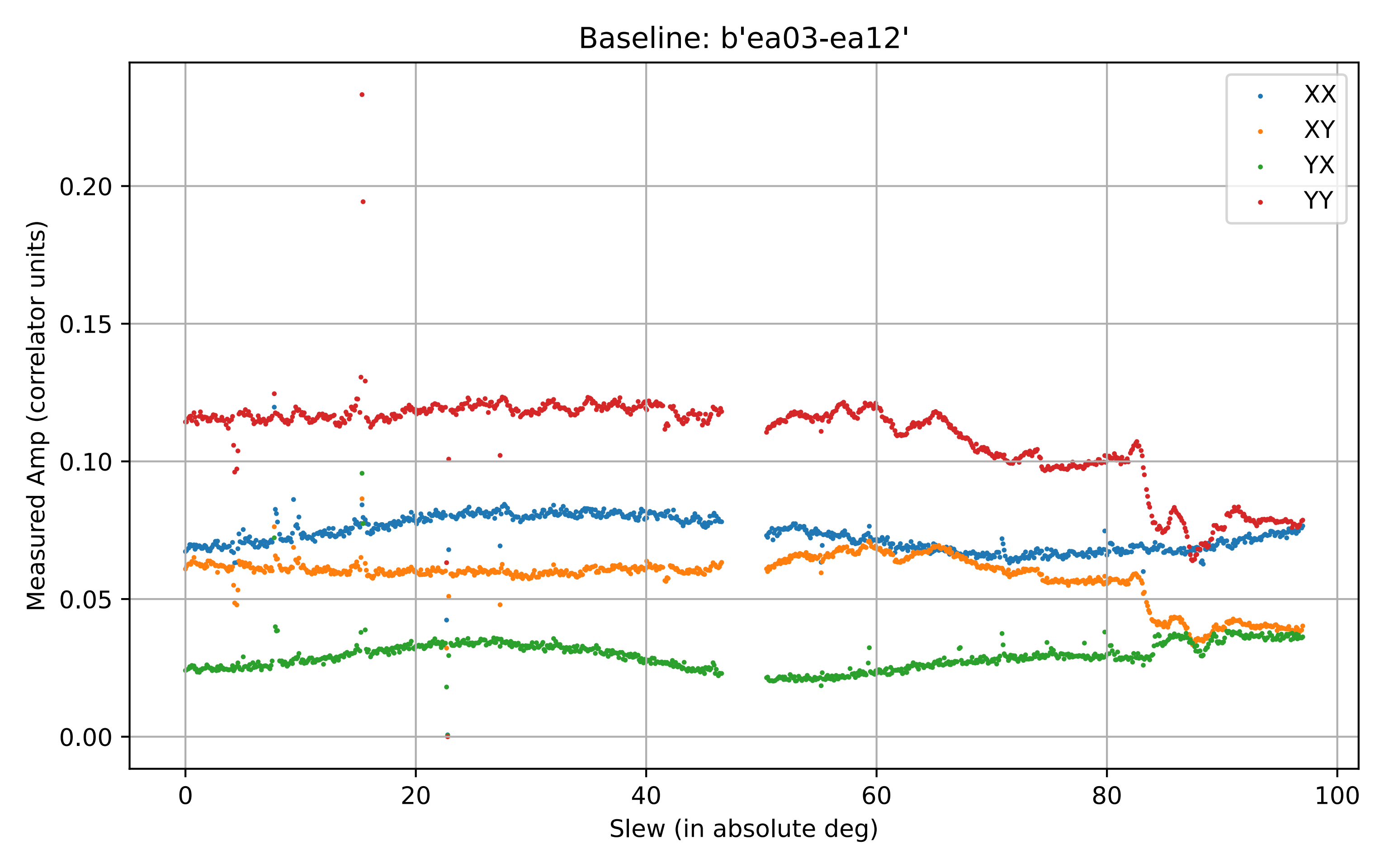

Baseline: b'ea03-ea09'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0.200
0
20
40
60
80
100

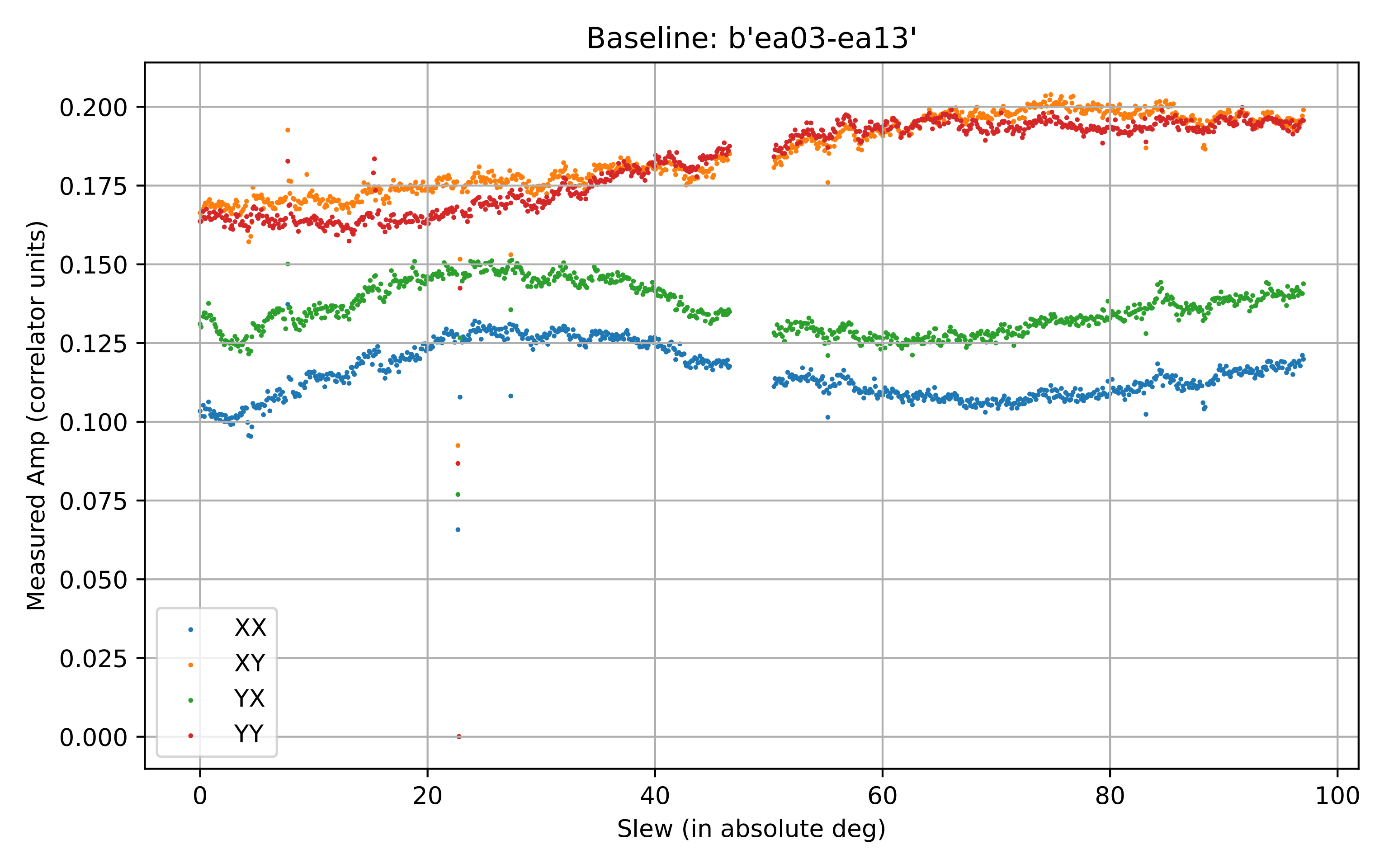


Baseline: b'ea03-ea10'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

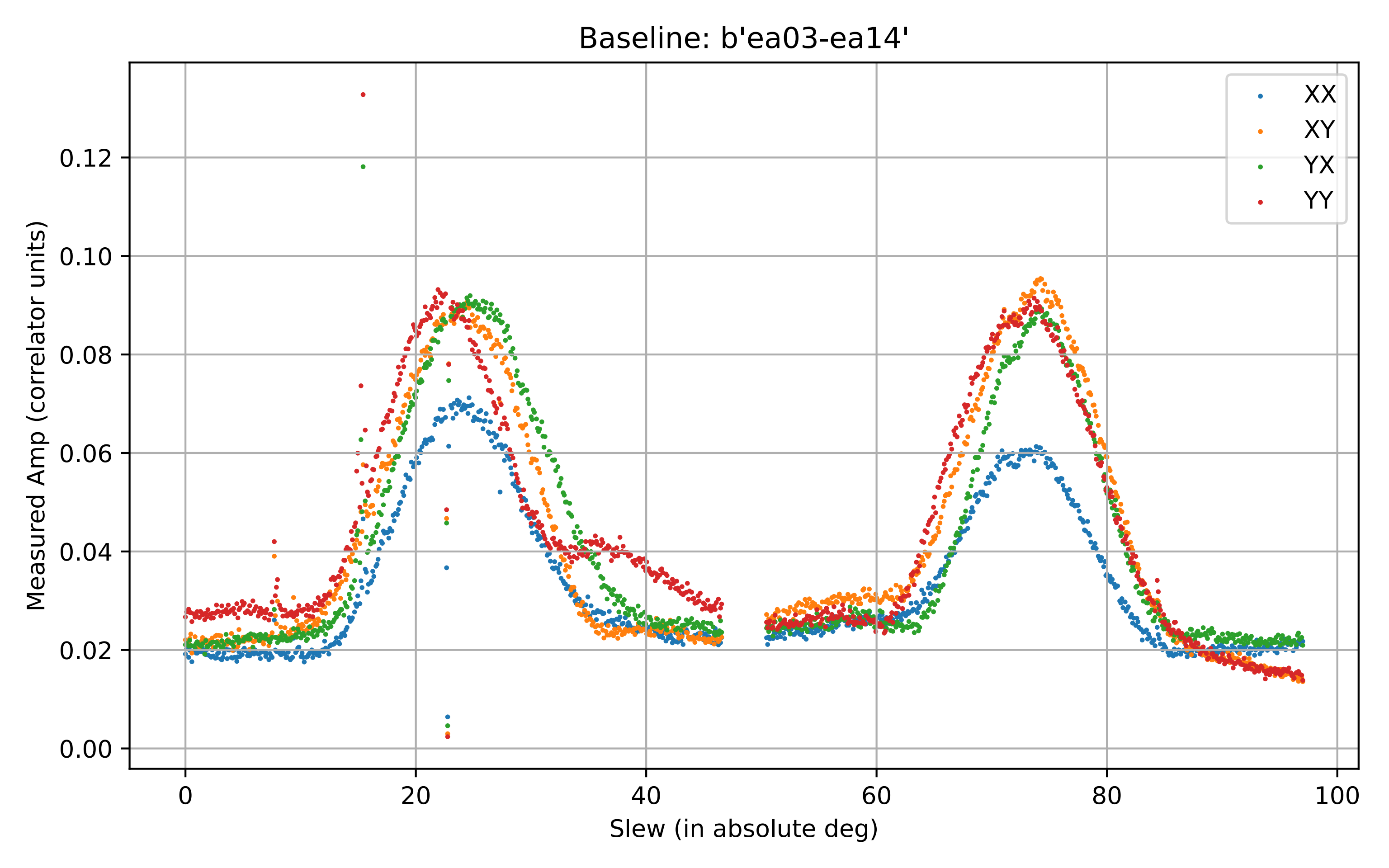


Baseline: b'ea03-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
XX
XY
YX
YY

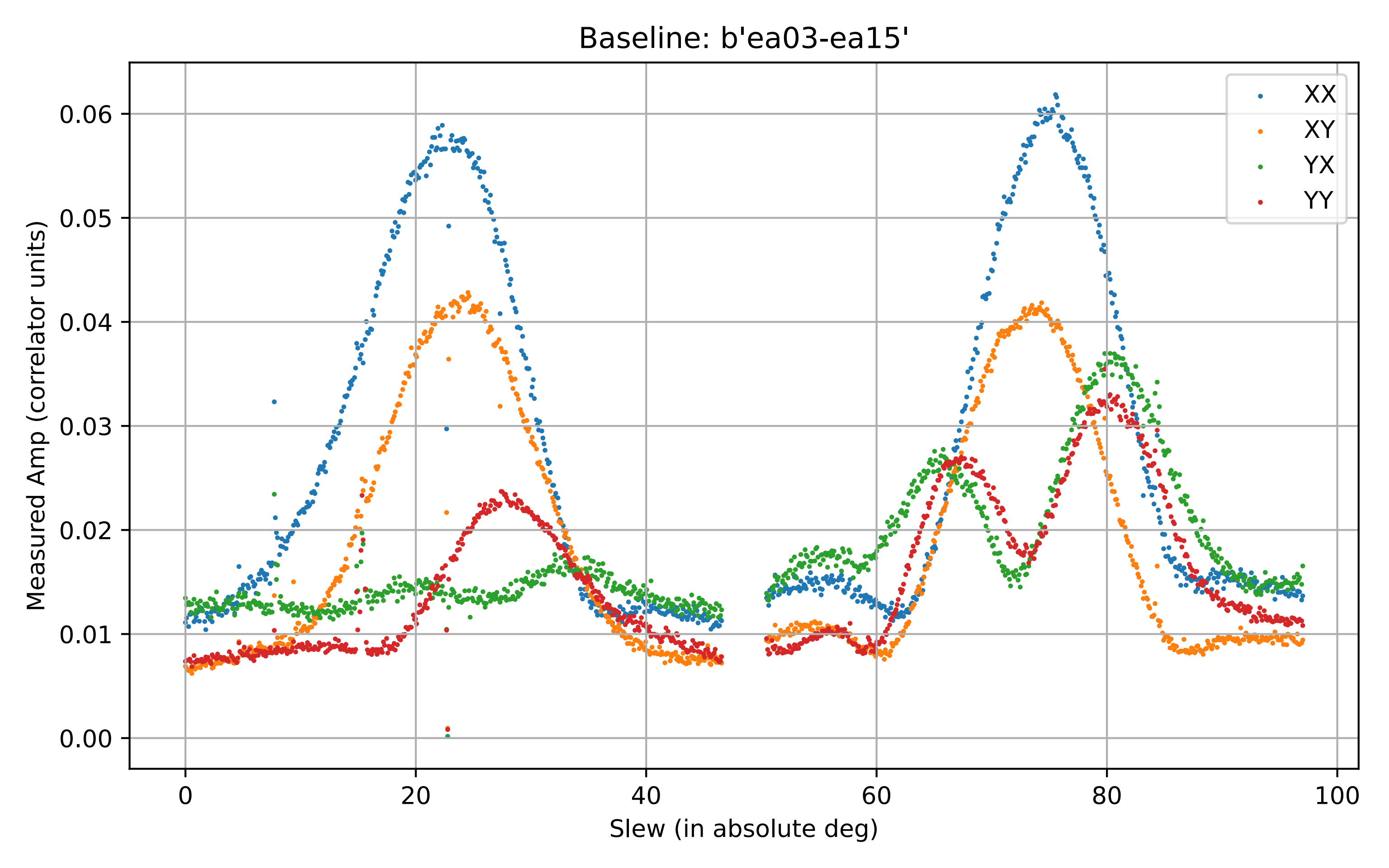

Baseline: b'ea03-ea12'
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)



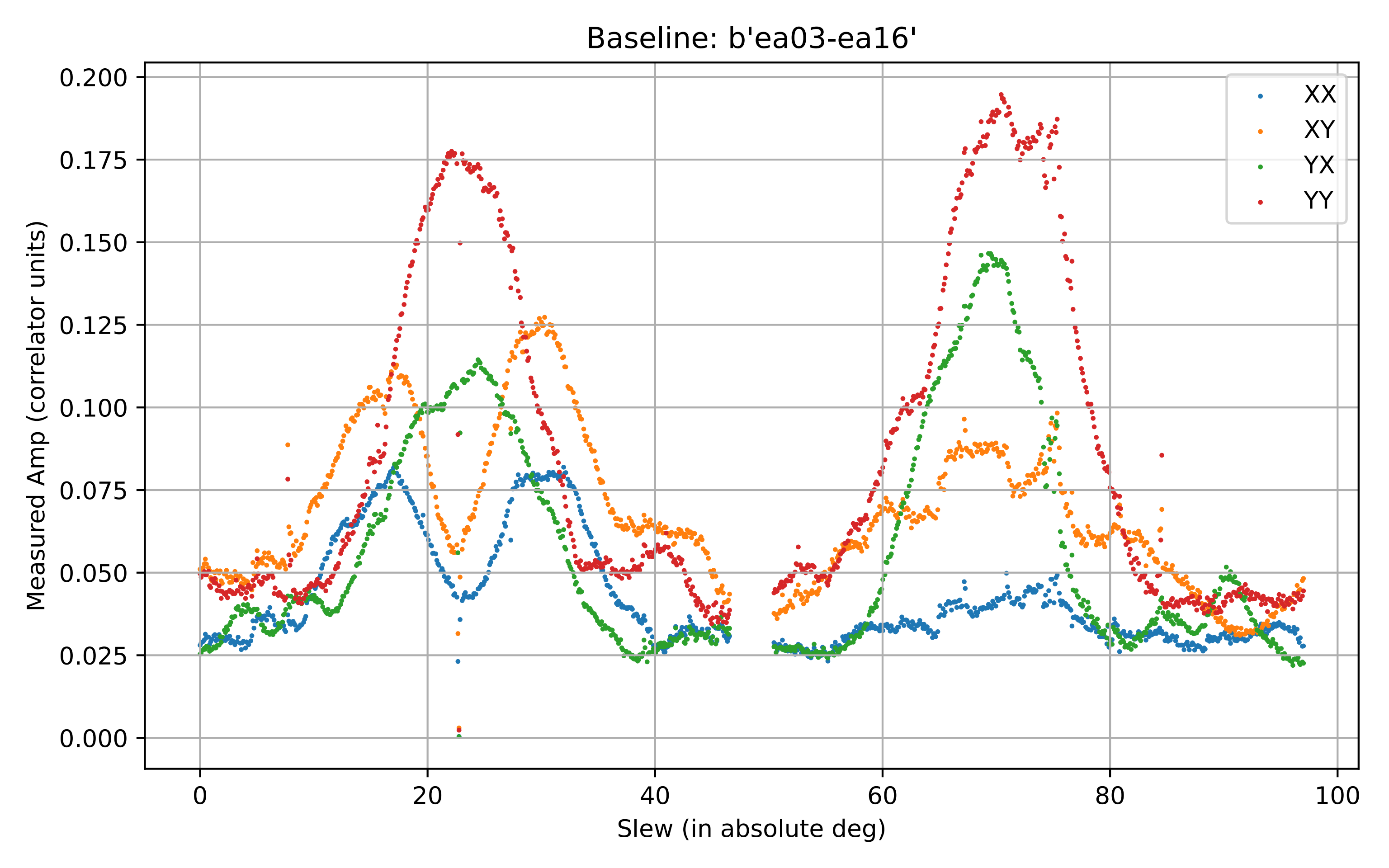
Baseline: b'ea03-ea13'
Measured Amp (correlator units)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



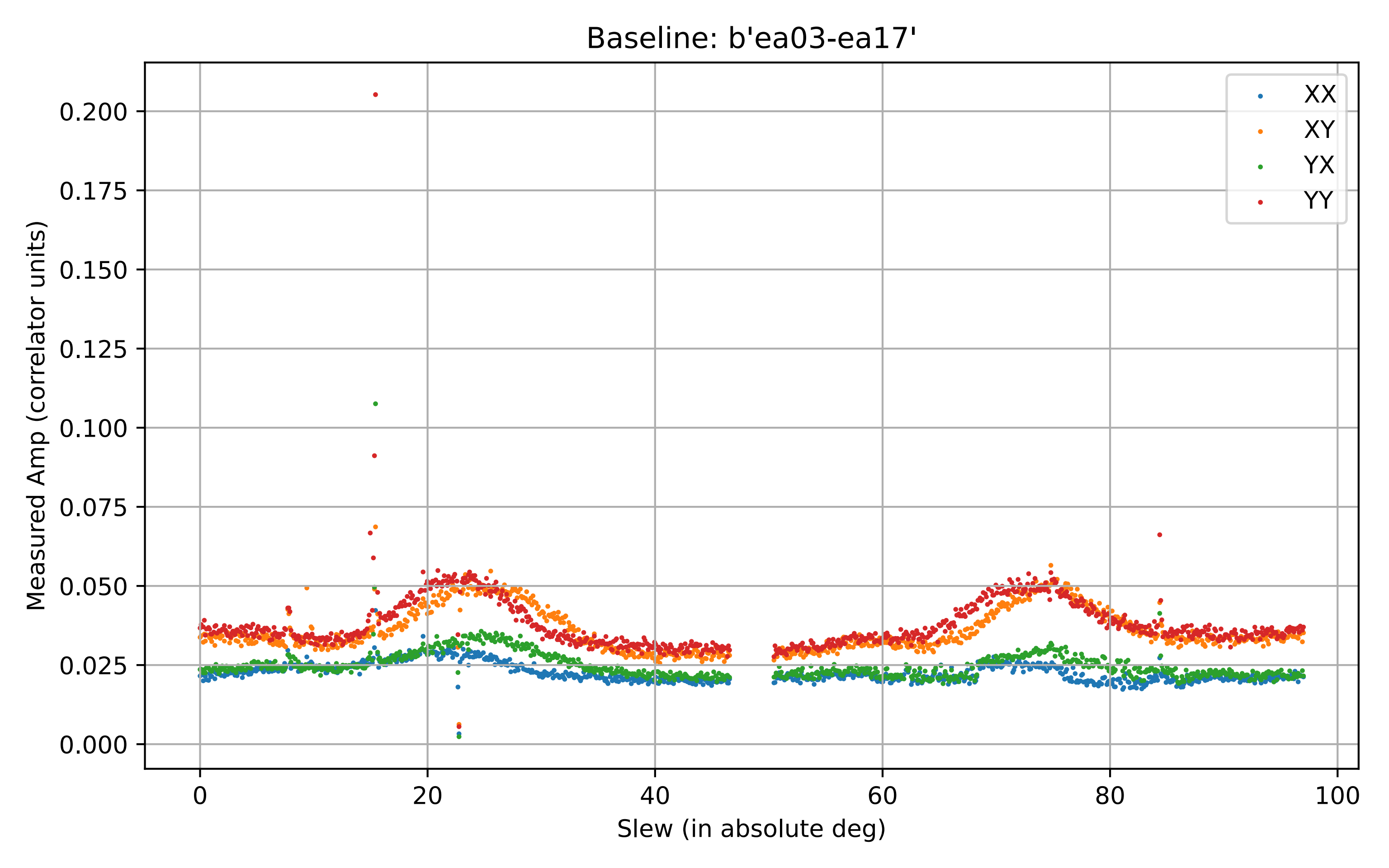
Baseline: b'ea03-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)

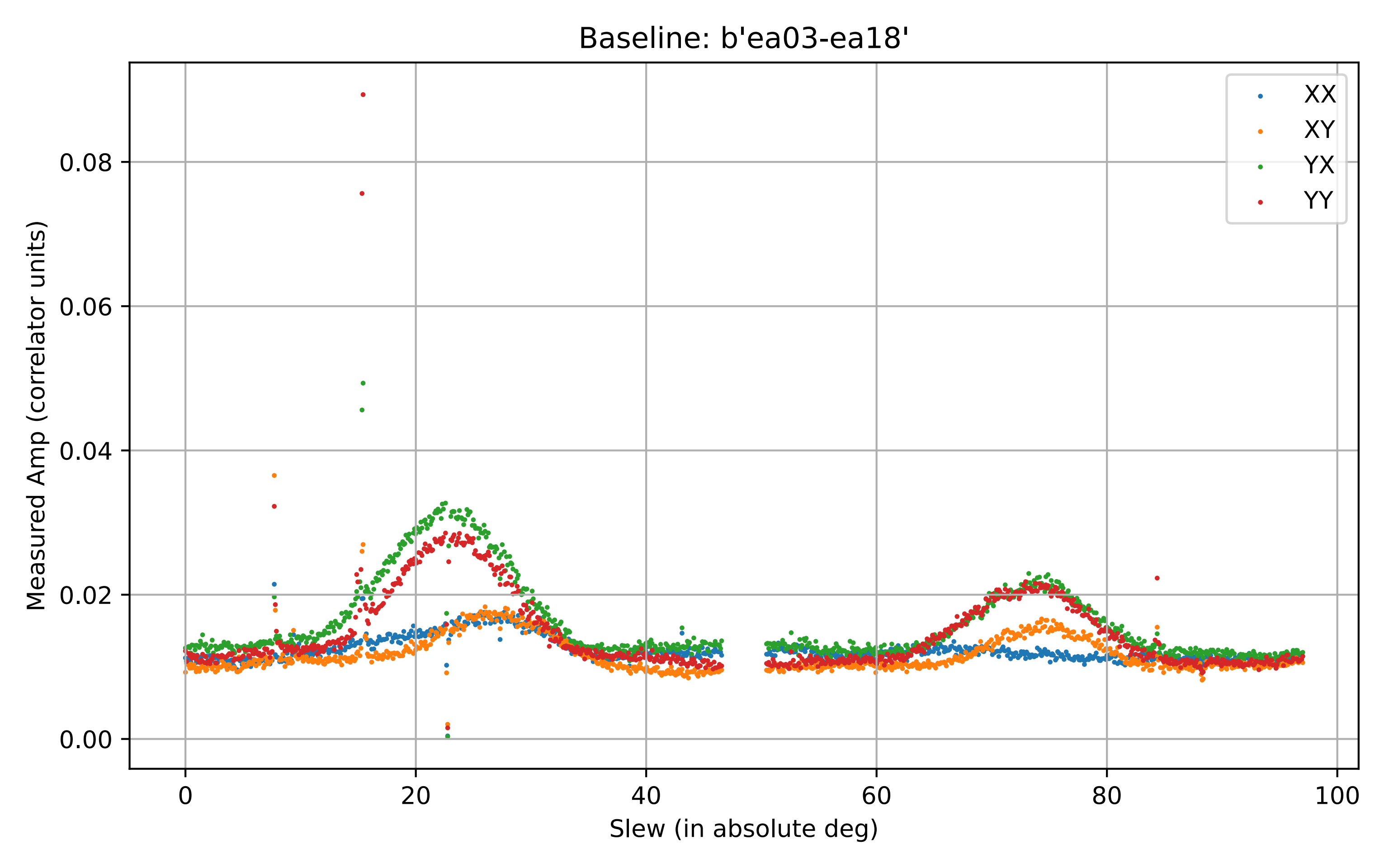


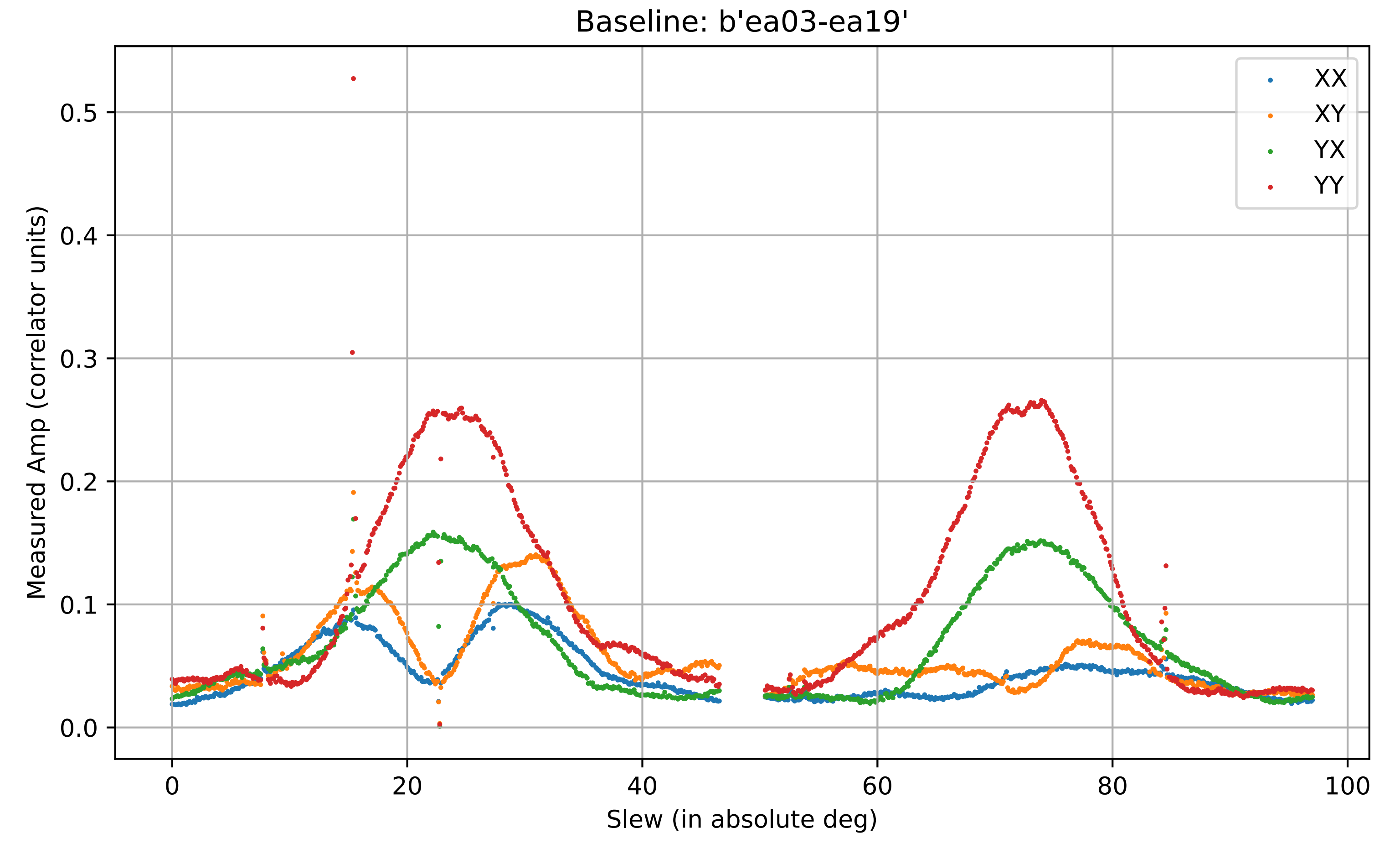
Baseline: b'ea03-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
Slew (in absolute deg)
0
20
40
60
80
100



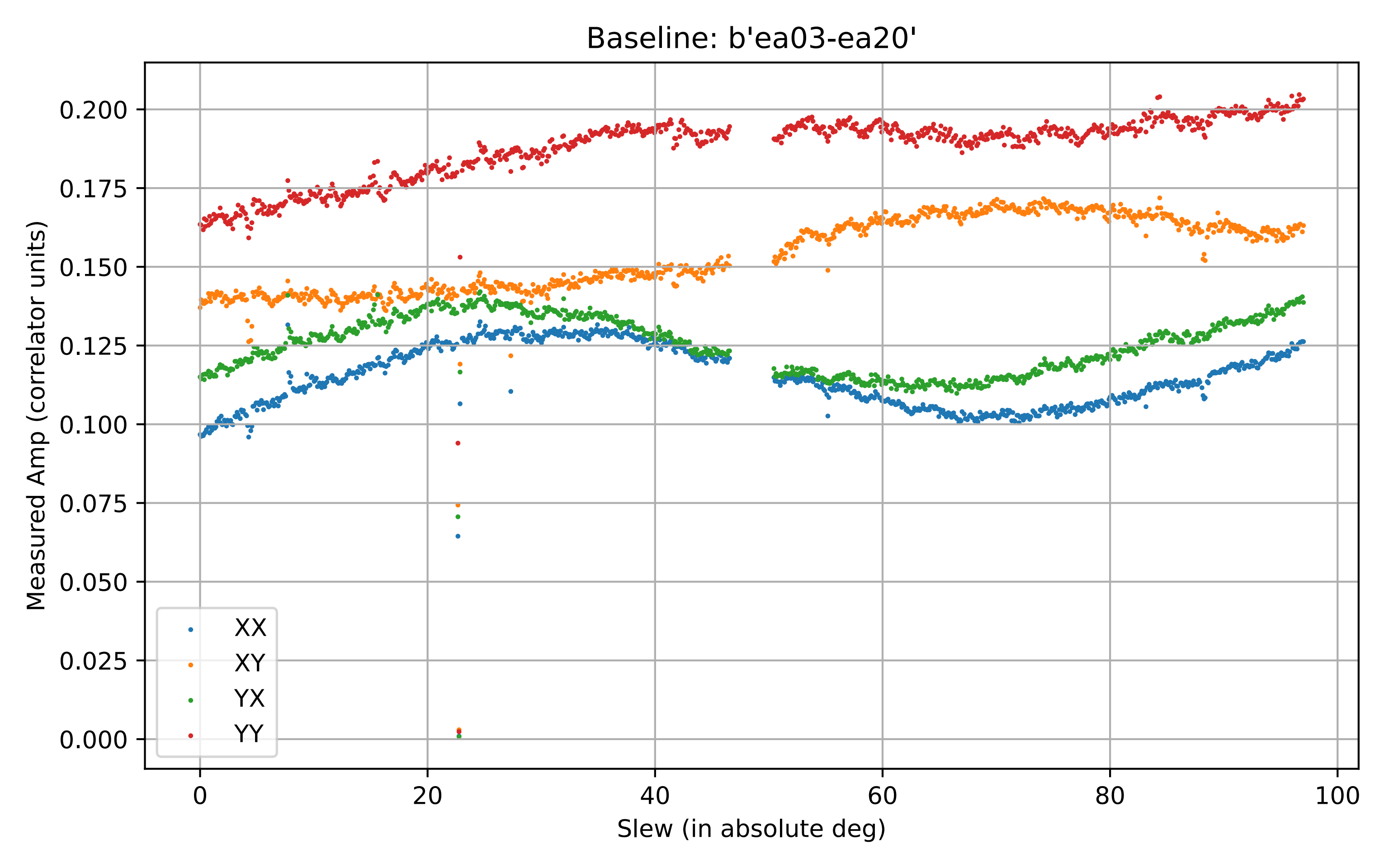
Baseline: b'ea03-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0.200
0
20
40
60
80
100


Baseline: b'ea03-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100

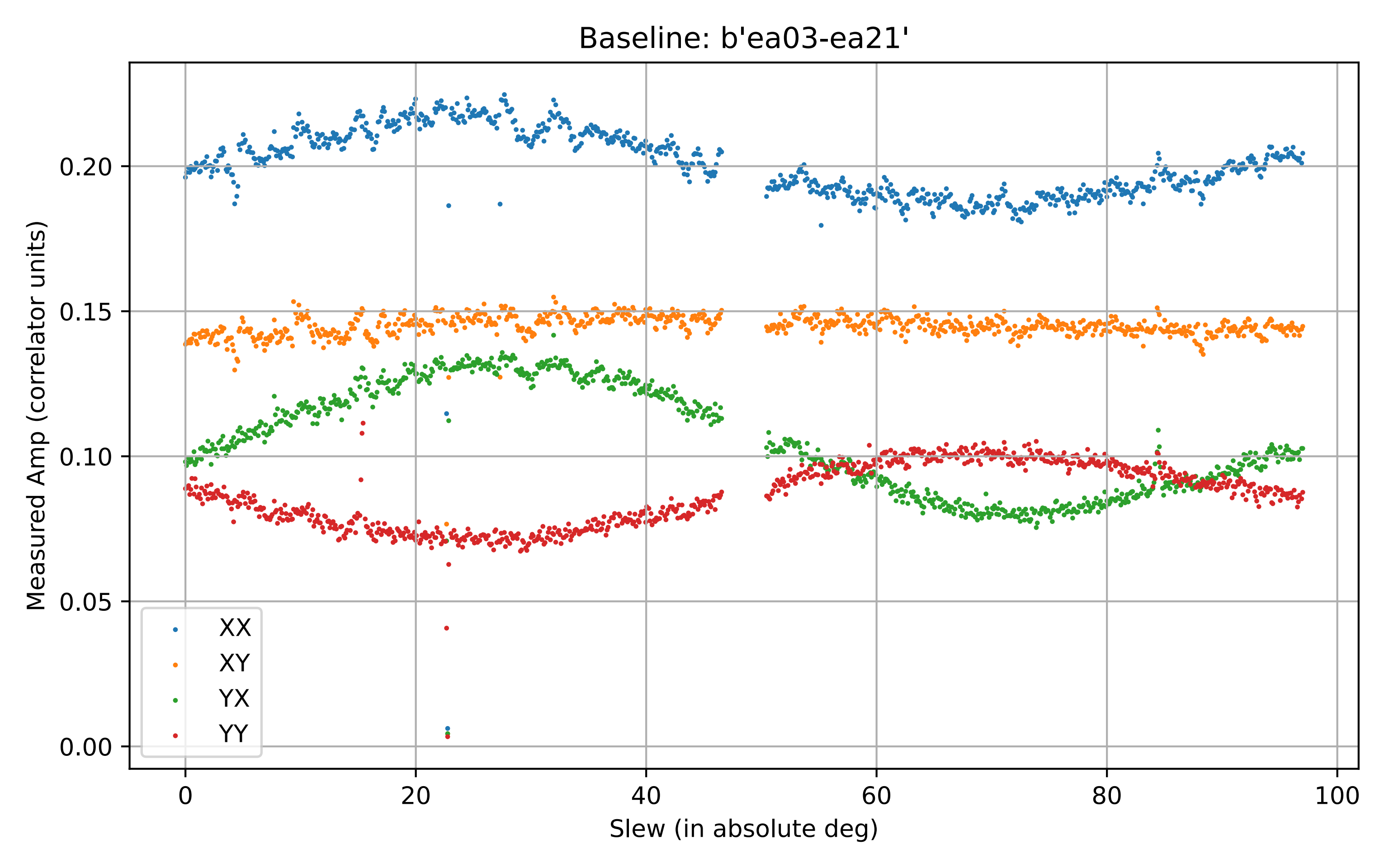

Baseline: b'ea03-ea18'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)



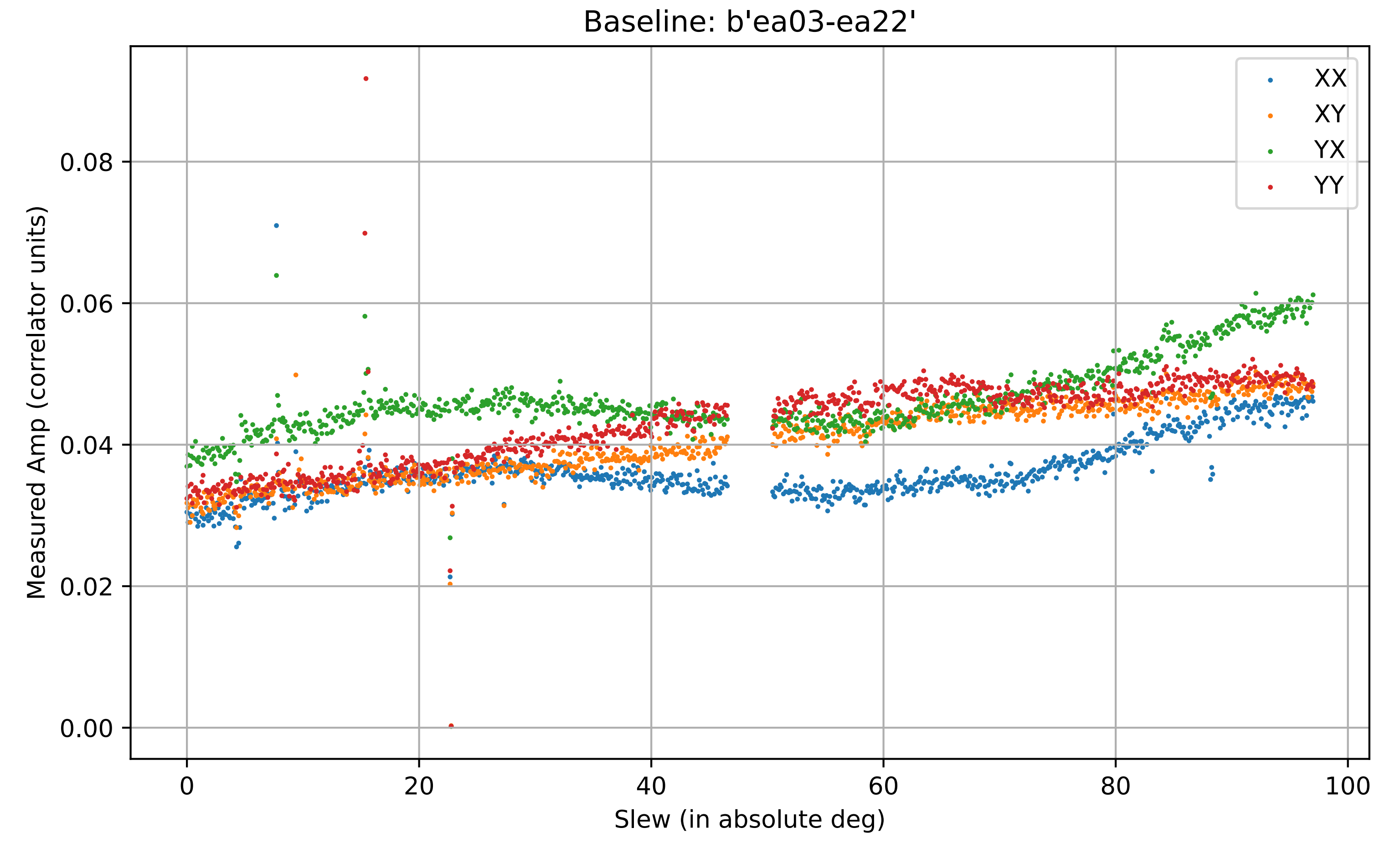
Baseline: b'ea03-ea19'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100



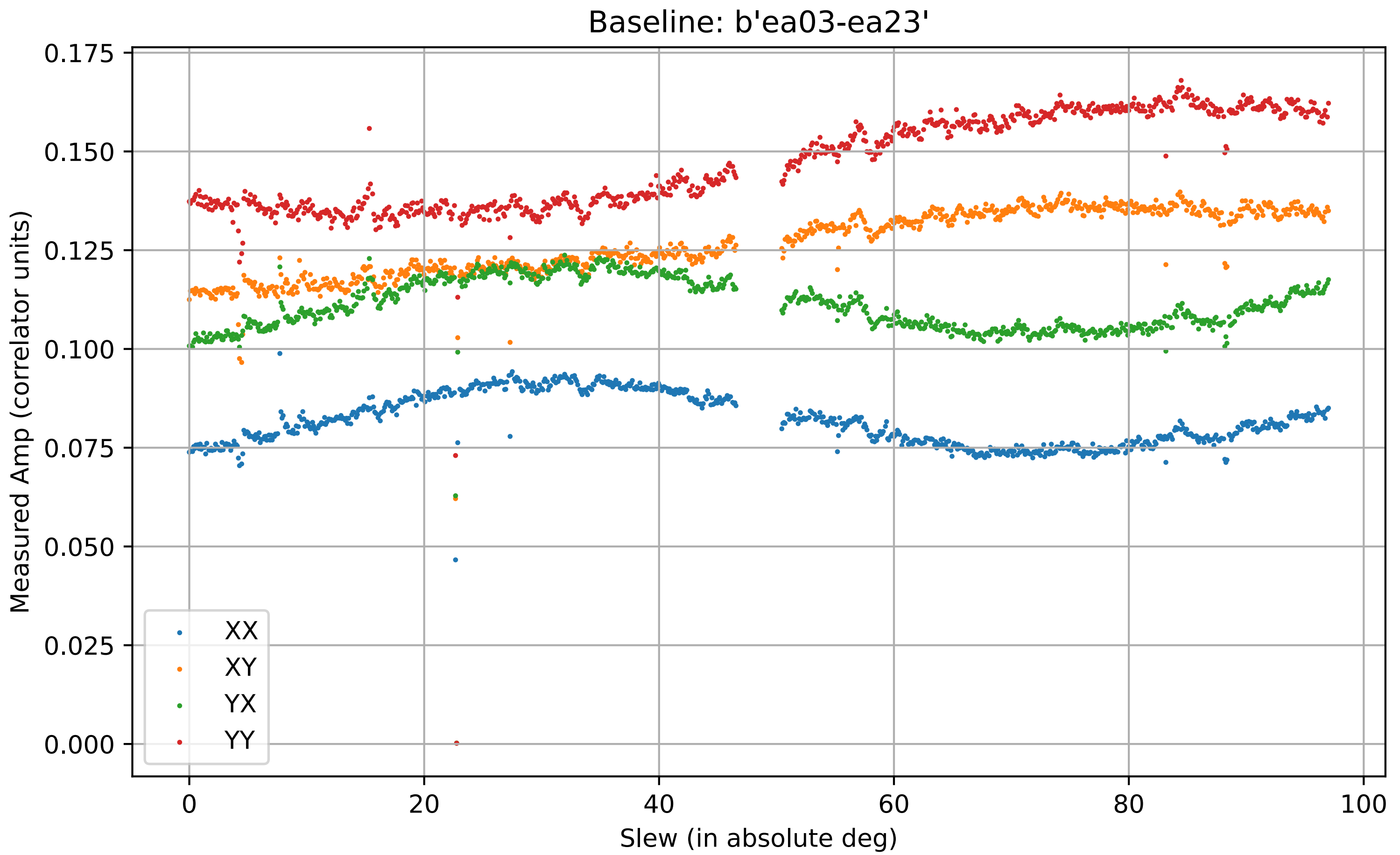
Baseline: b'ea03-ea20'
Measured Amp (correlator units)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

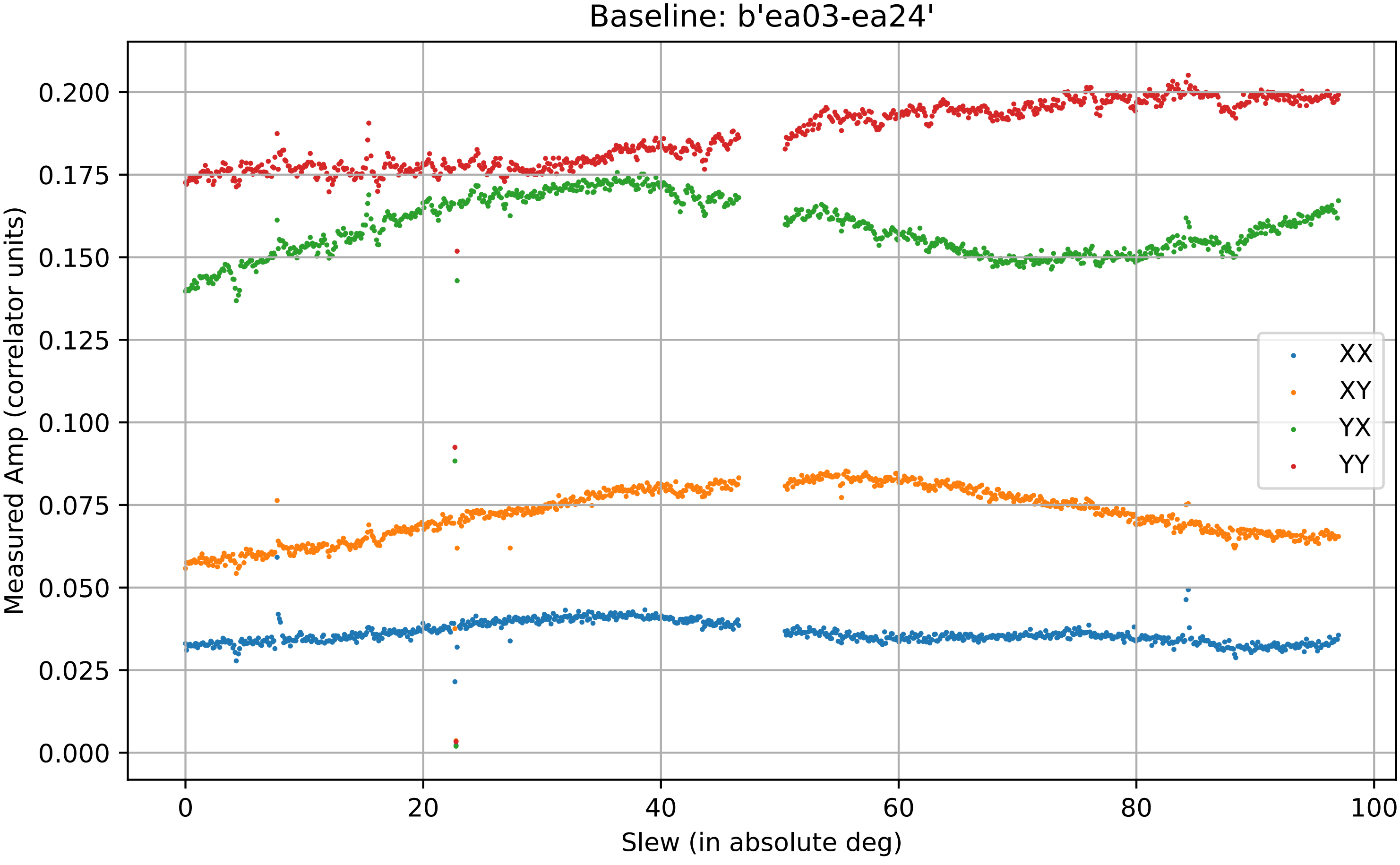


Baseline: b'ea03-ea21'
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

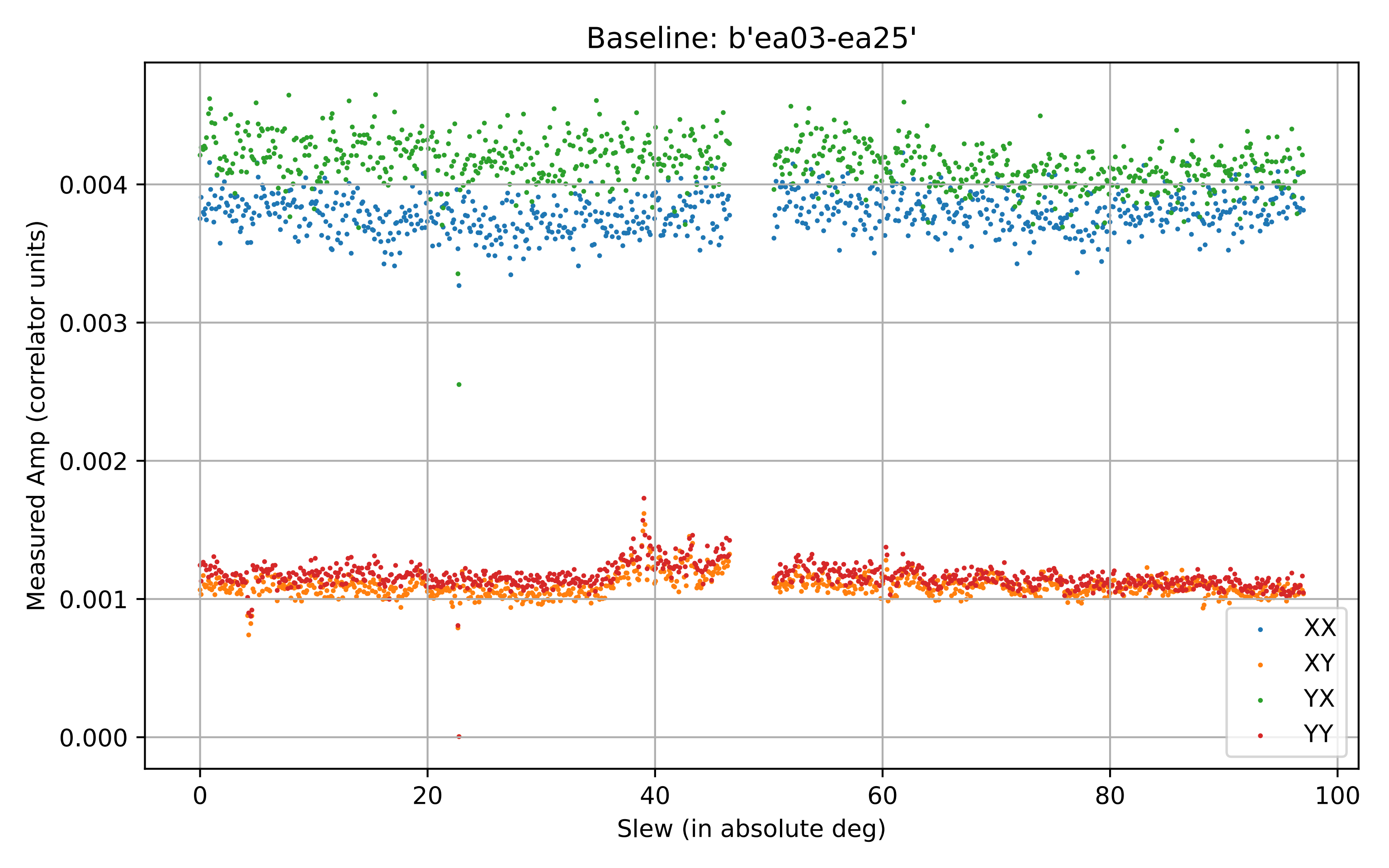


Baseline: b'ea03-ea22'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)

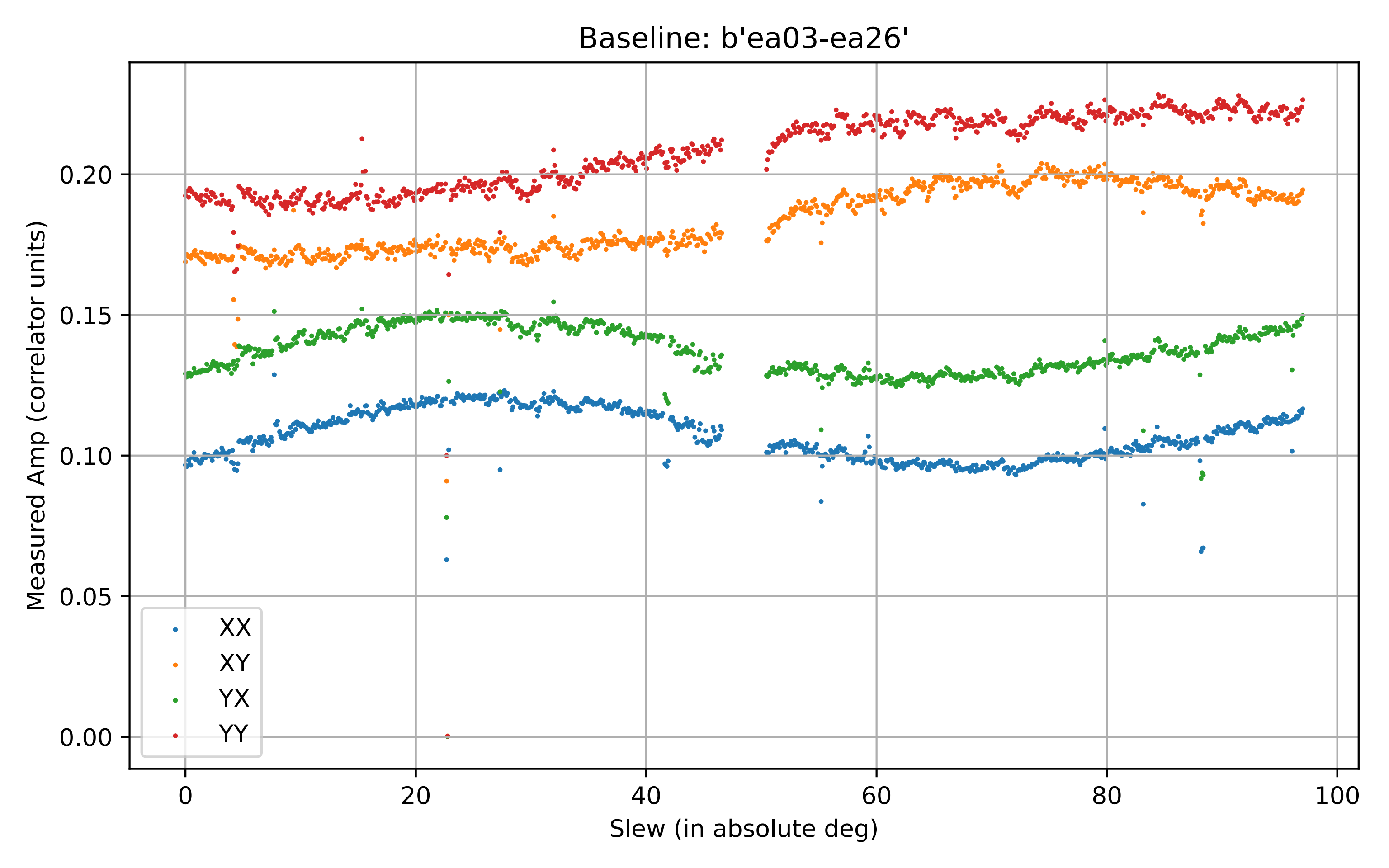

Baseline: b'ea03-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100



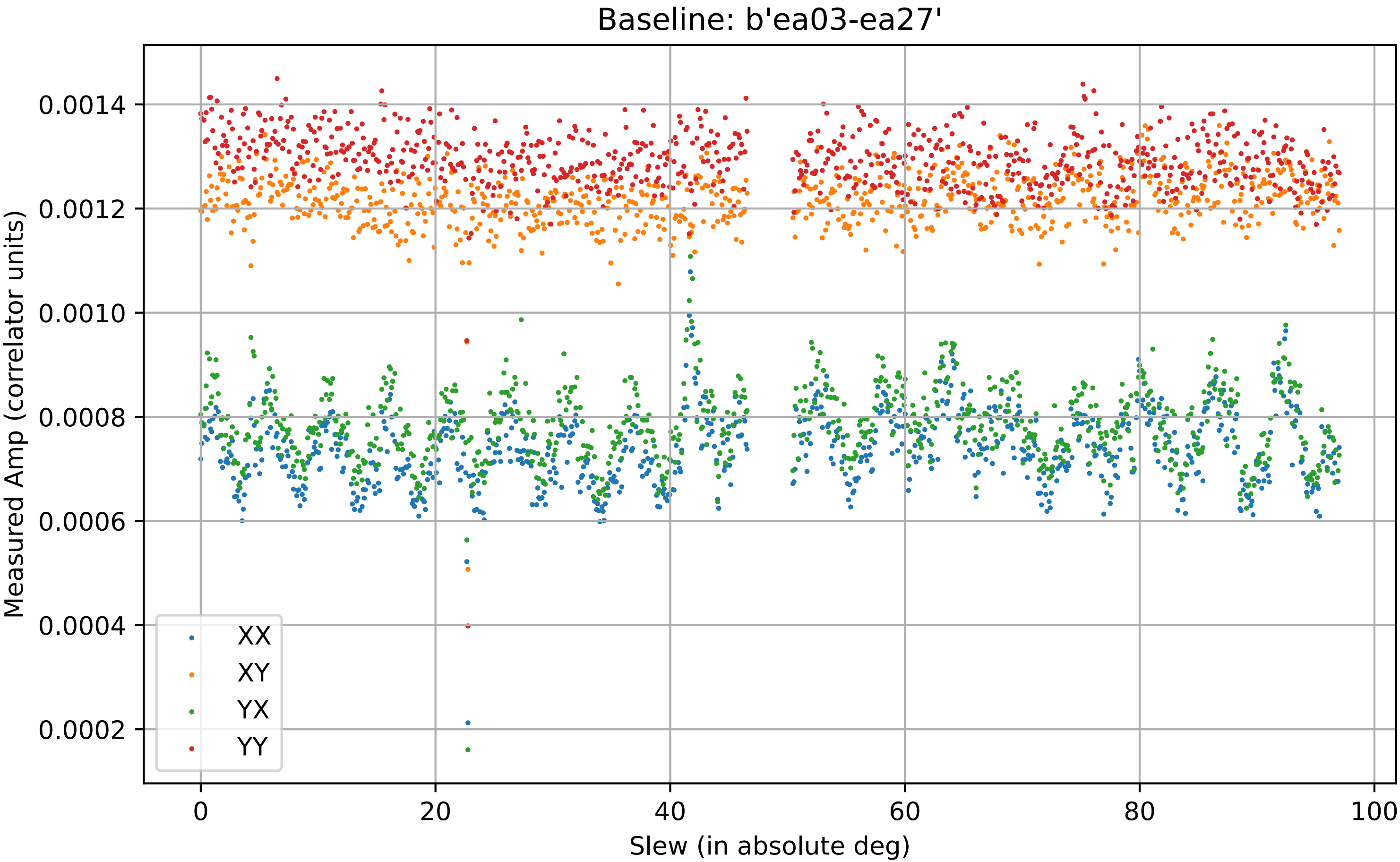
Baseline: b'ea03-ea24'
Measured Amp (correlator units)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



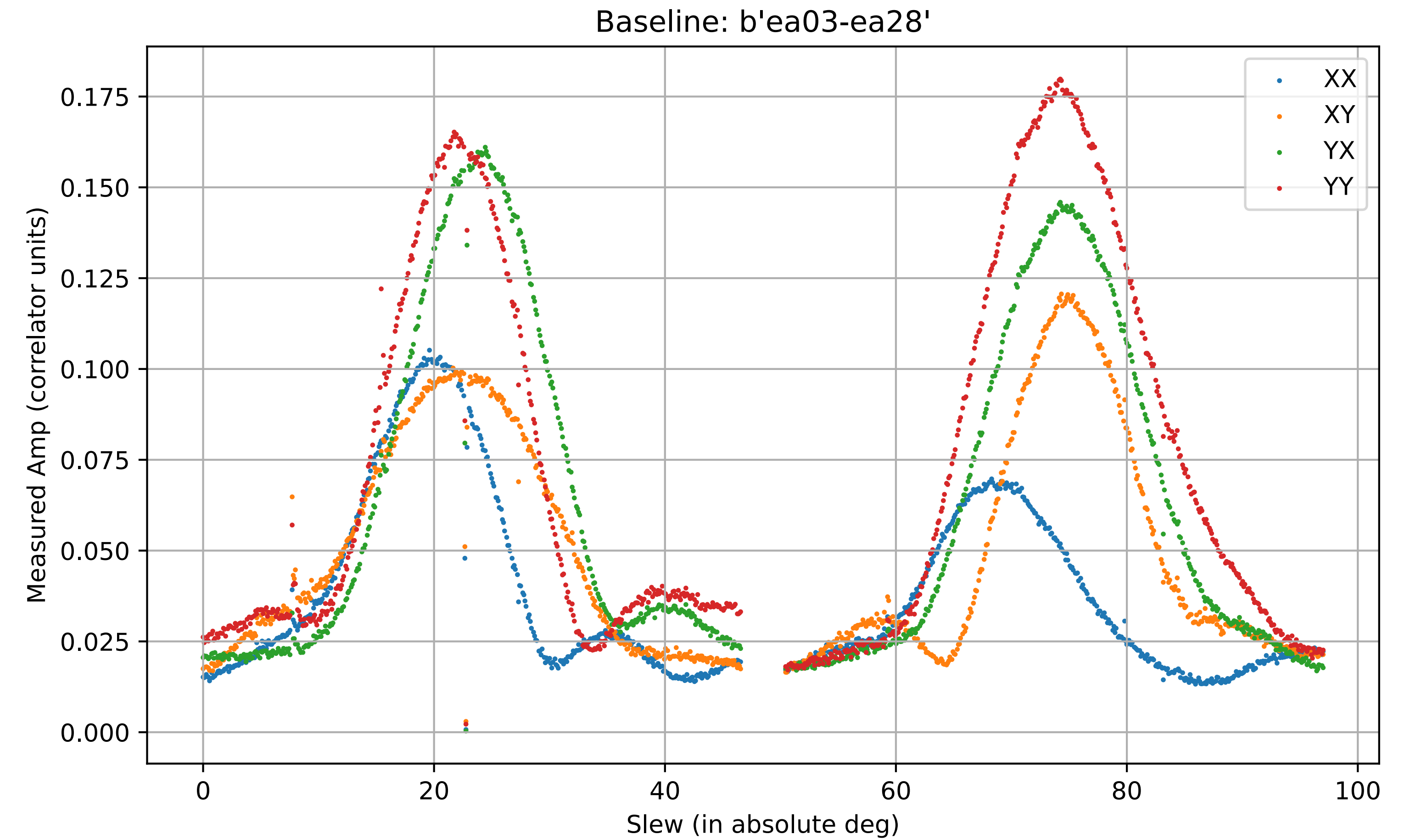
Baseline: b'ea03-ea25'
Measured Amp (correlator units)
0.004
0.003
0.002
0.001
0.000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



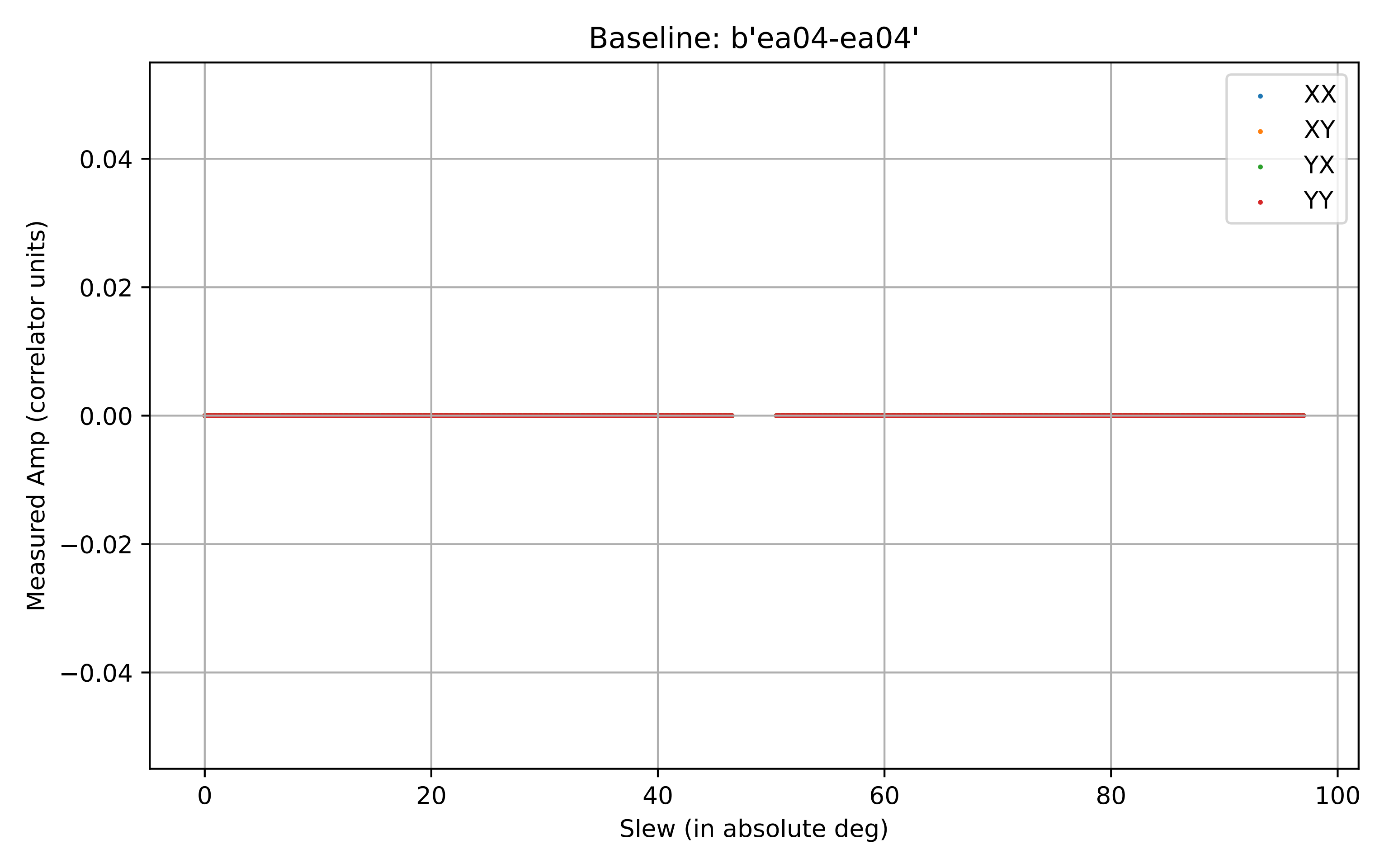
Baseline: b'ea03-ea26'
Measured Amp (correlator units)
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

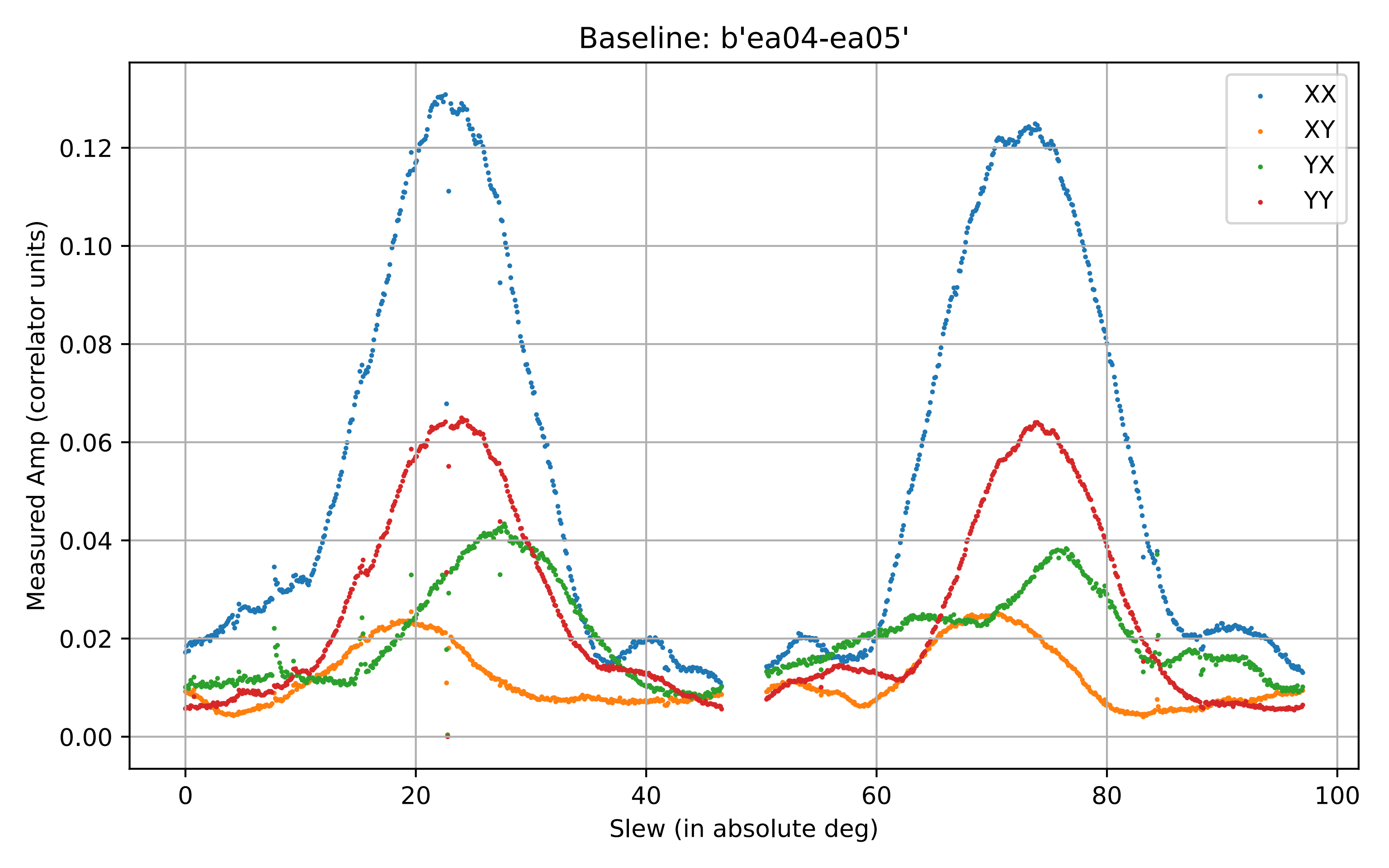


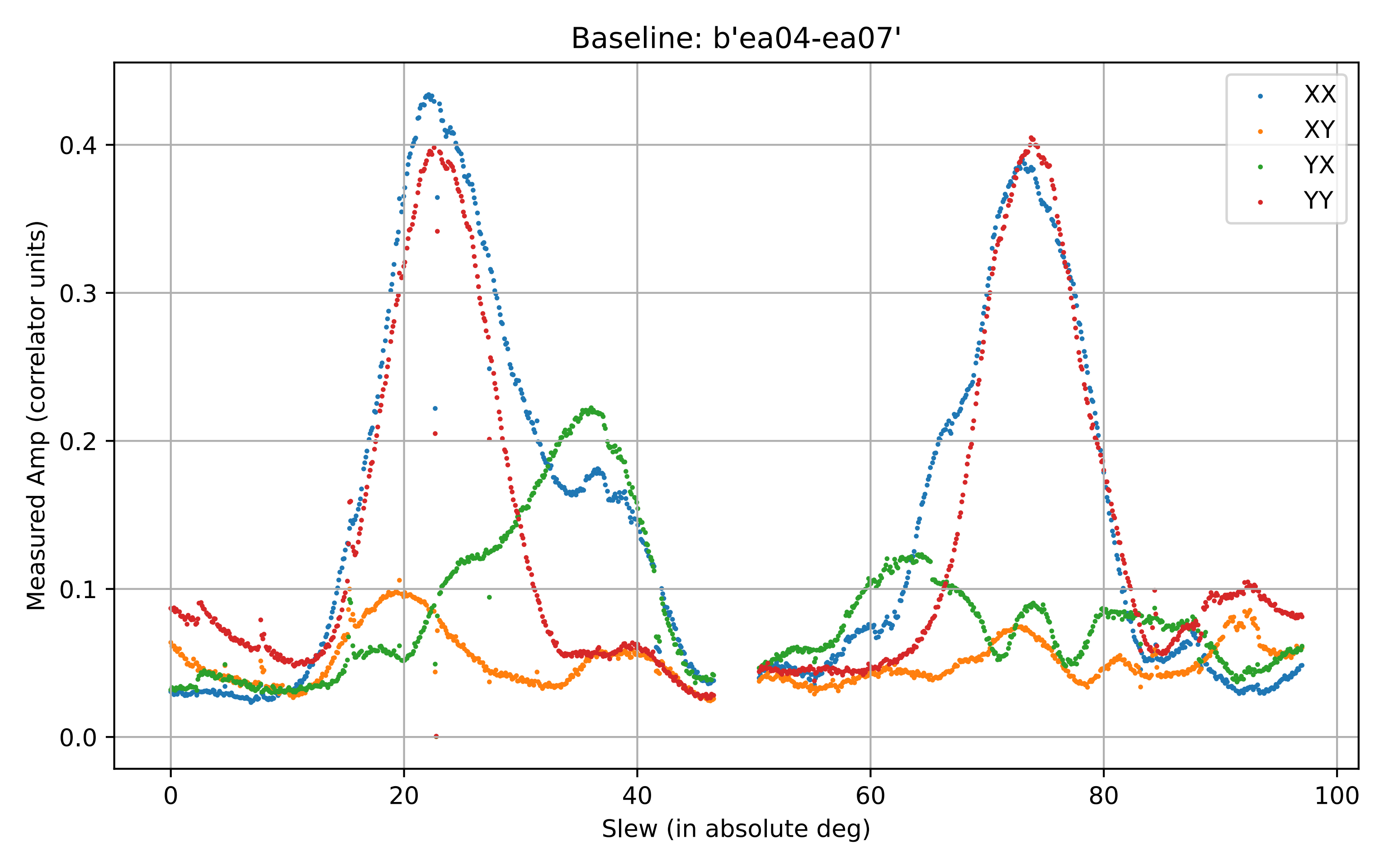
Baseline: b'ea03-ea27'
Measured Amp (correlator units)
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



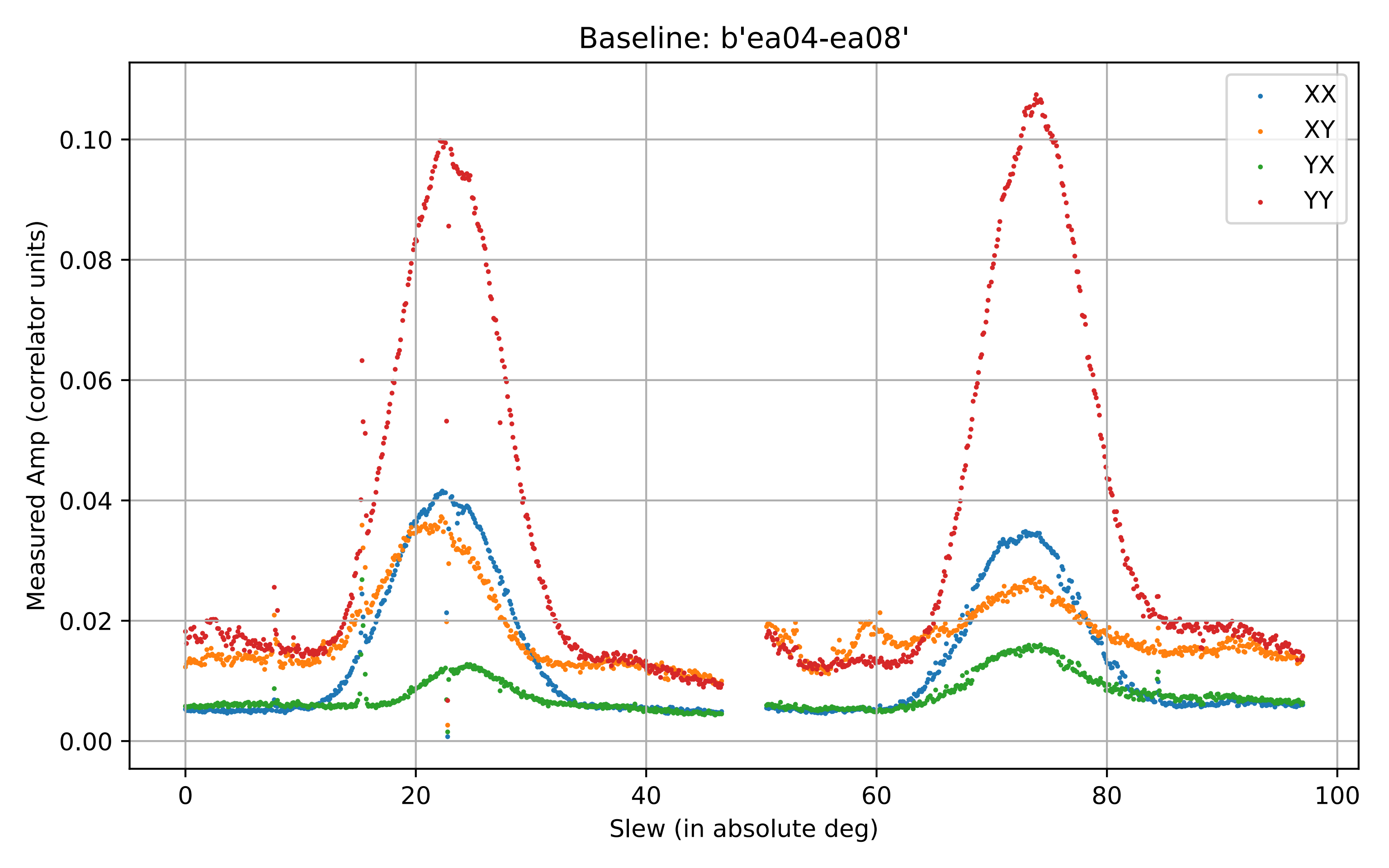
Baseline: b'ea03-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100


Baseline: b'ea04-ea04'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.04
0.02
0.00
−0.02
−0.04
0
20
40
60
80
100

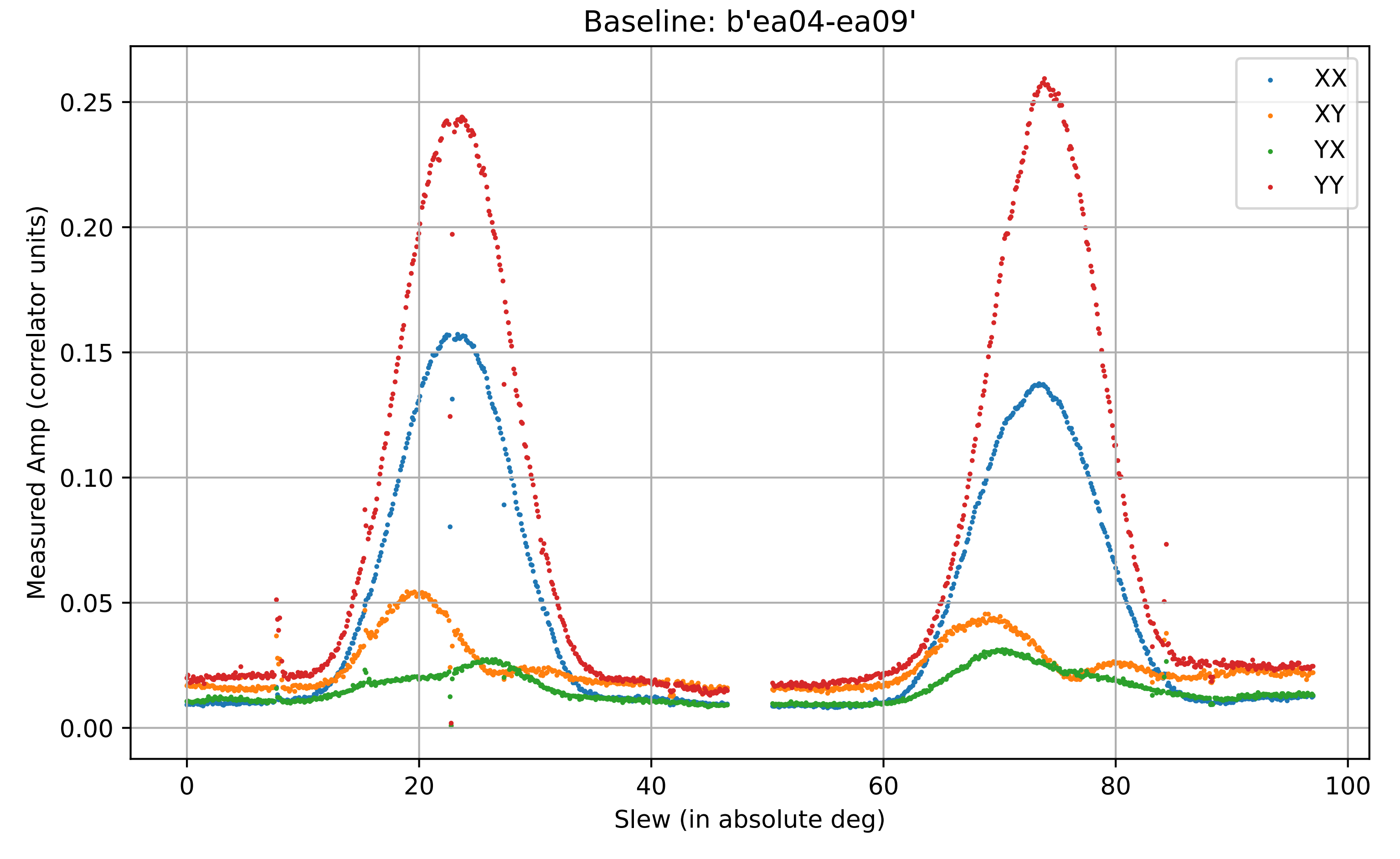

Baseline: b'ea04-ea05'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100



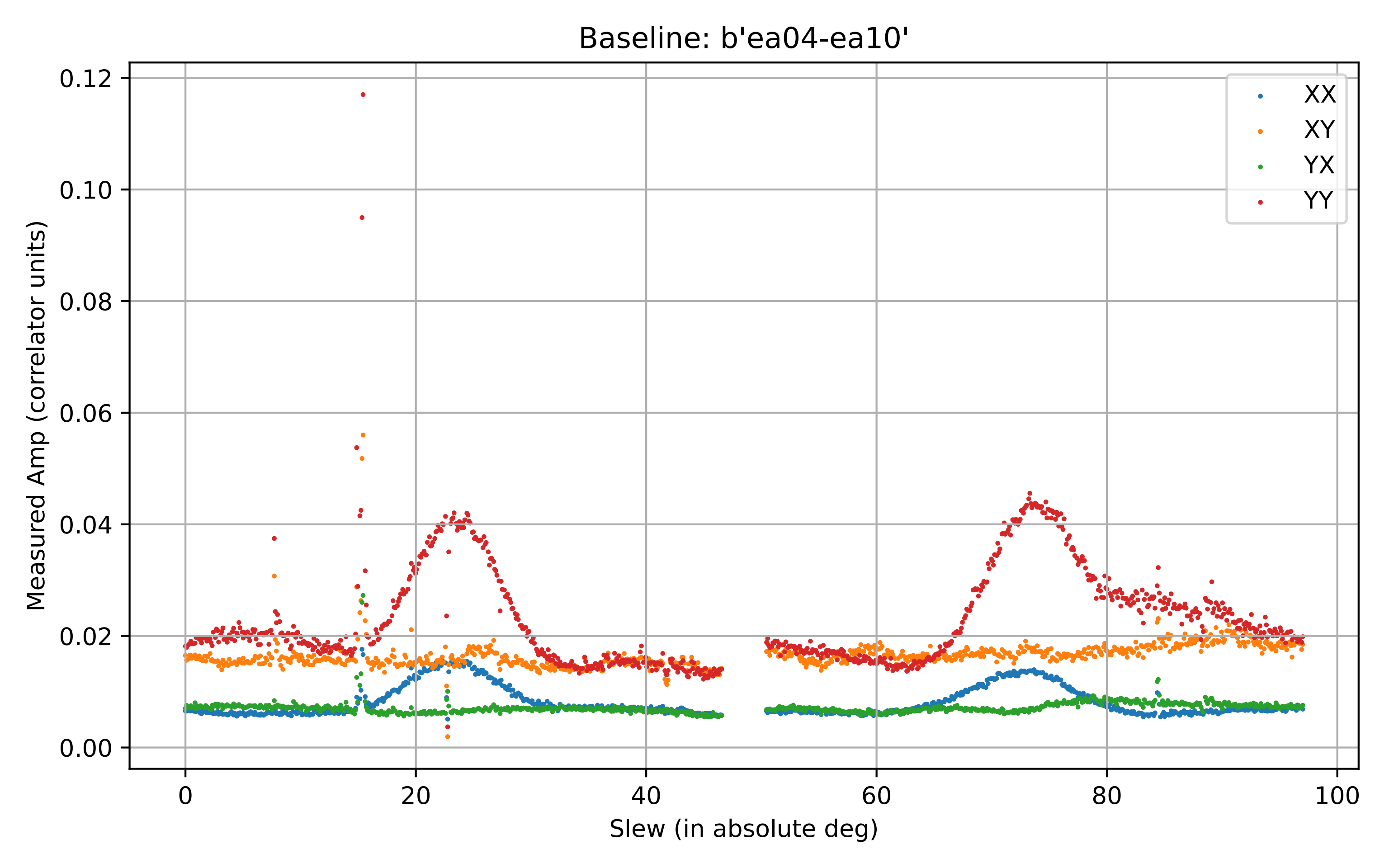
Baseline: b'ea04-ea07'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100
Slew (in absolute deg)



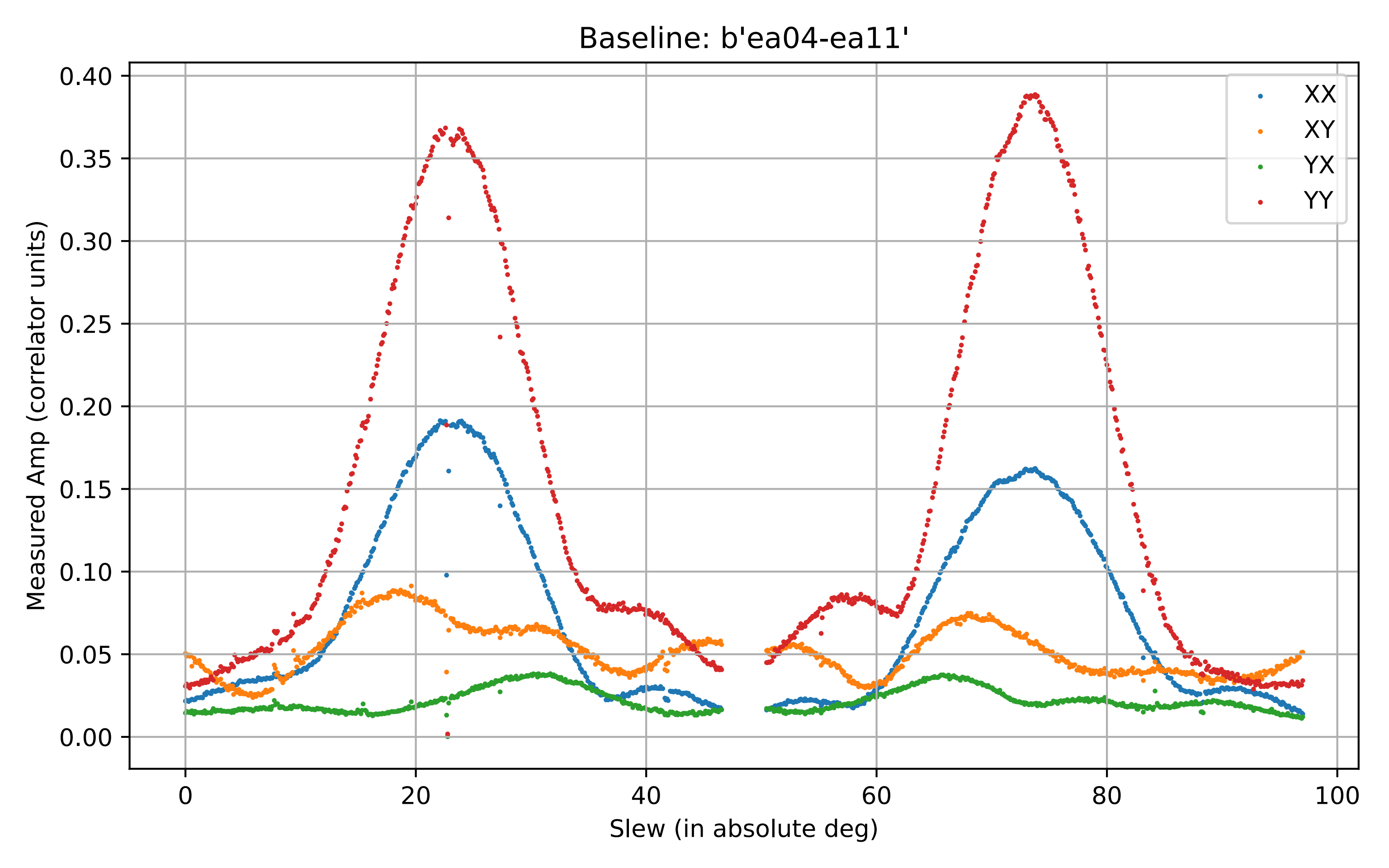
Baseline: b'ea04-ea08'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

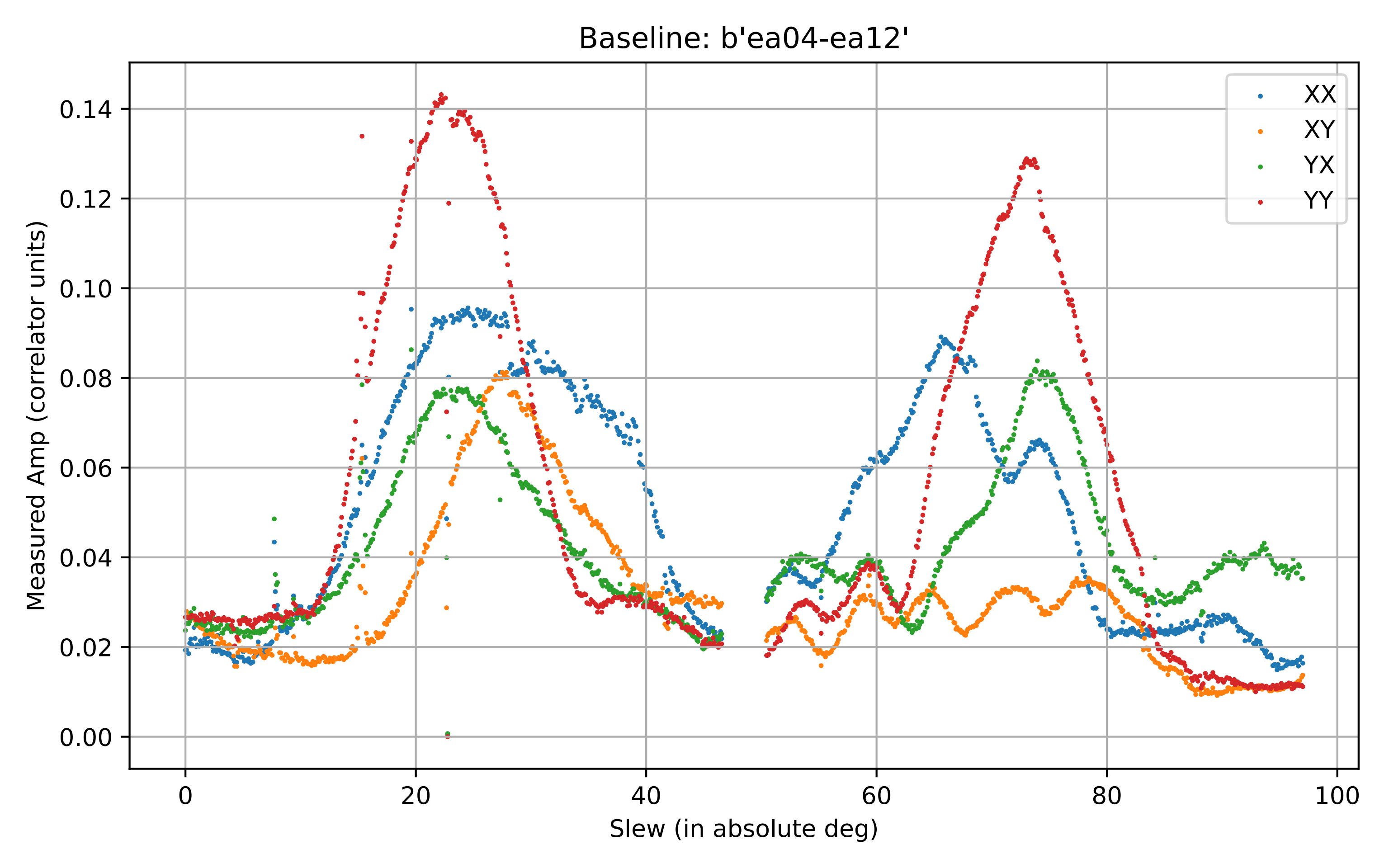


Baseline: b'ea04-ea09'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)

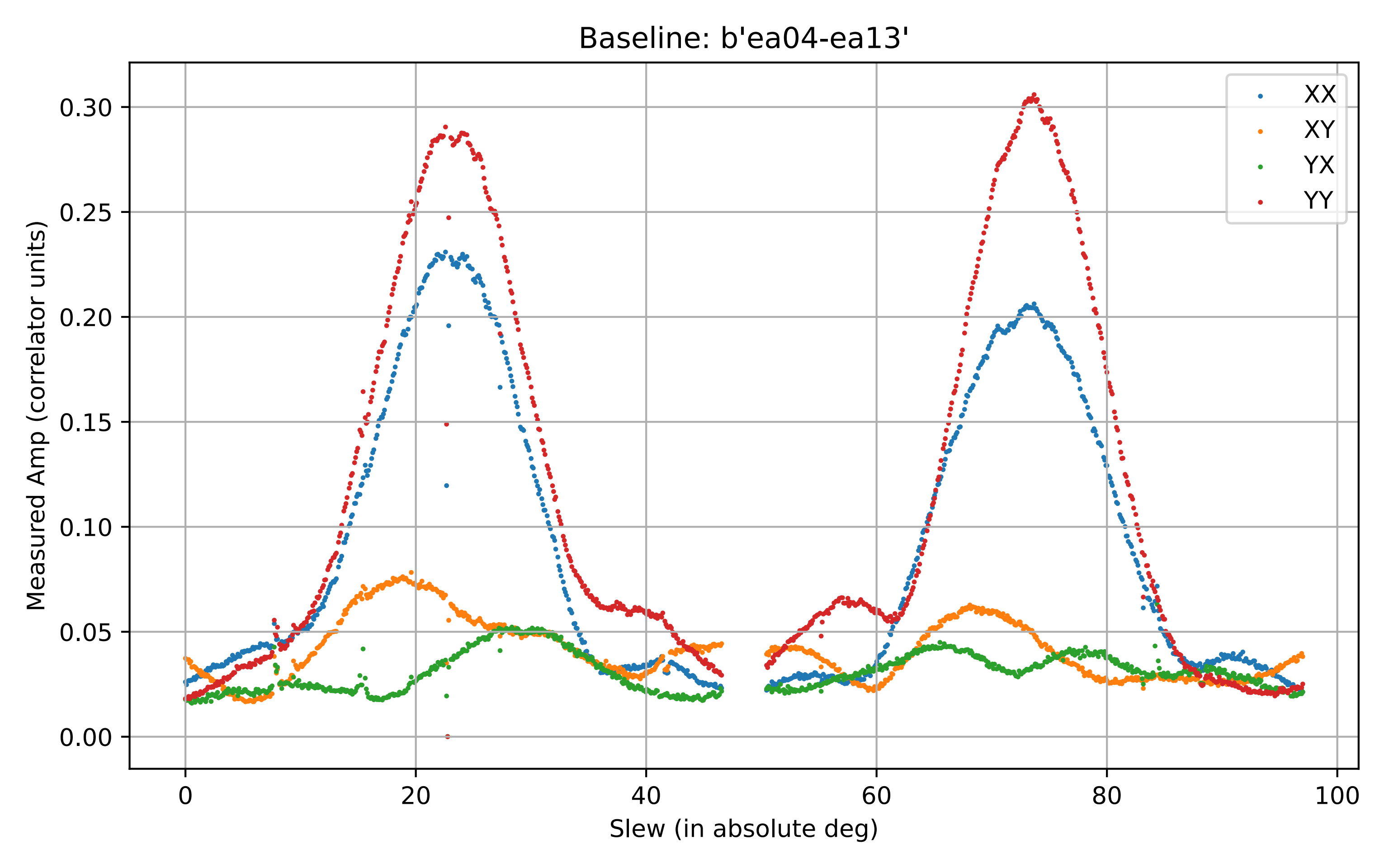


Baseline: b'ea04-ea10'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

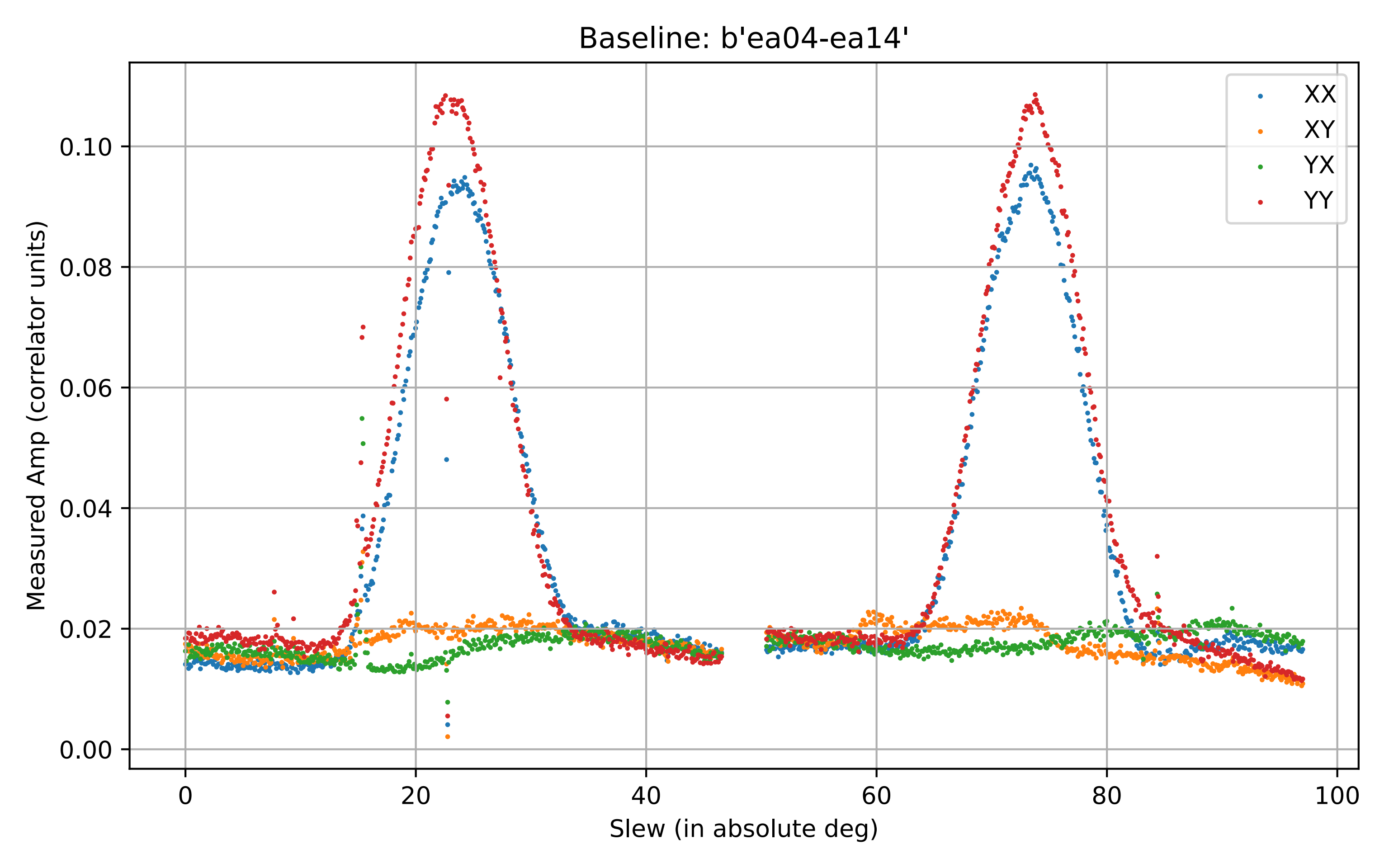

Baseline: b'ea04-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100

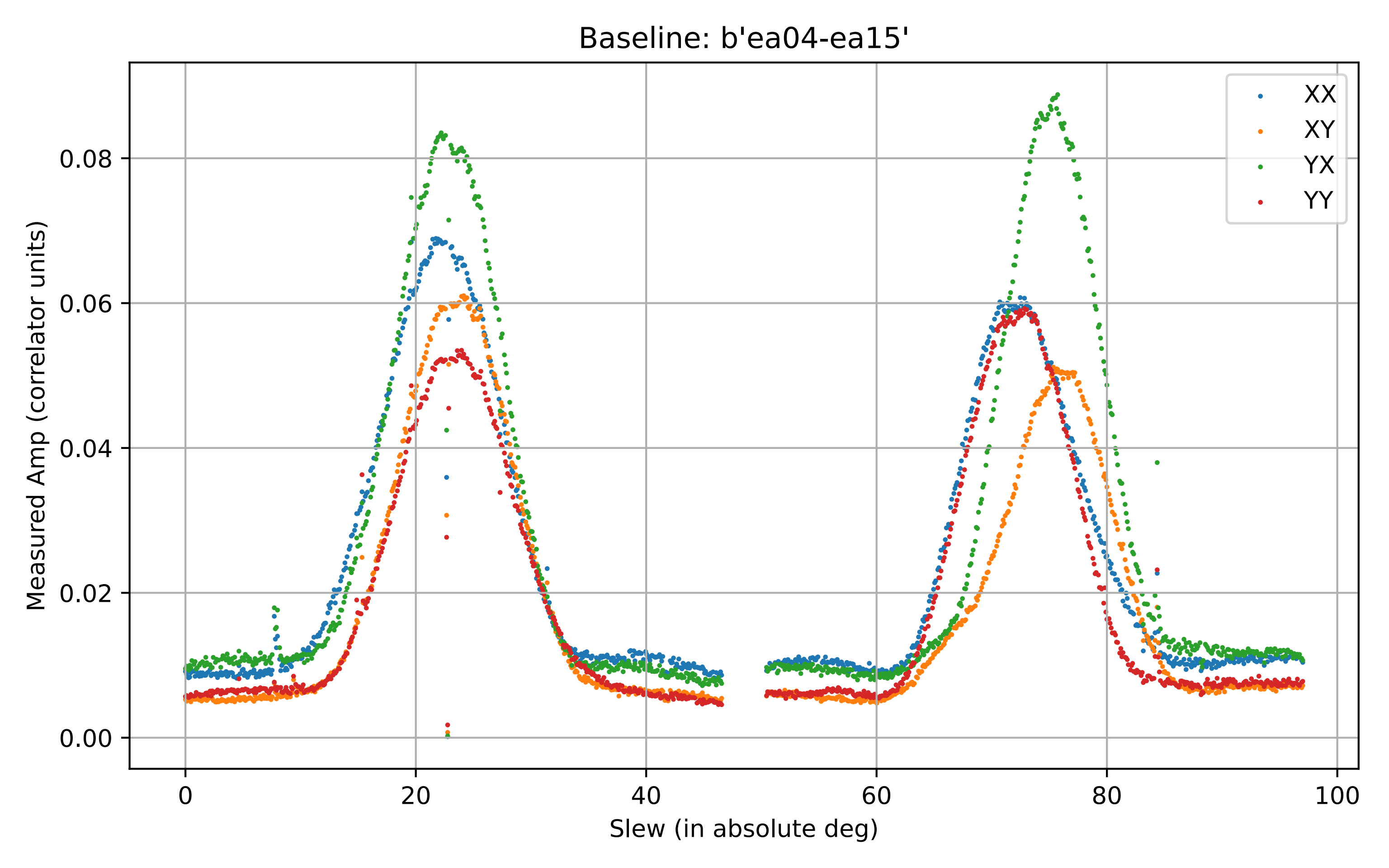


Baseline: b'ea04-ea12'
XX
XY
YX
YY
Measured Amp (correlator units)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100
Slew (in absolute deg)

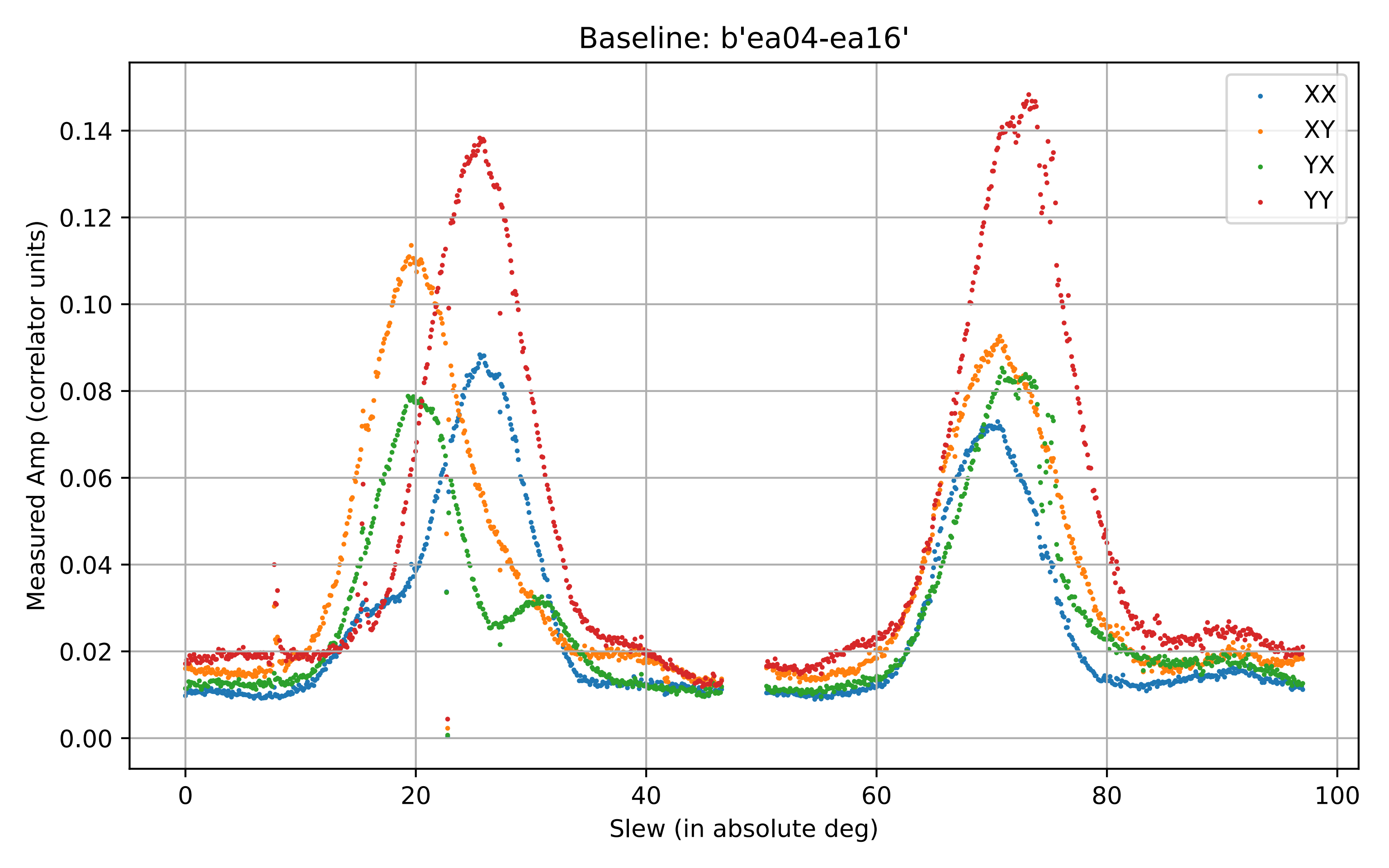


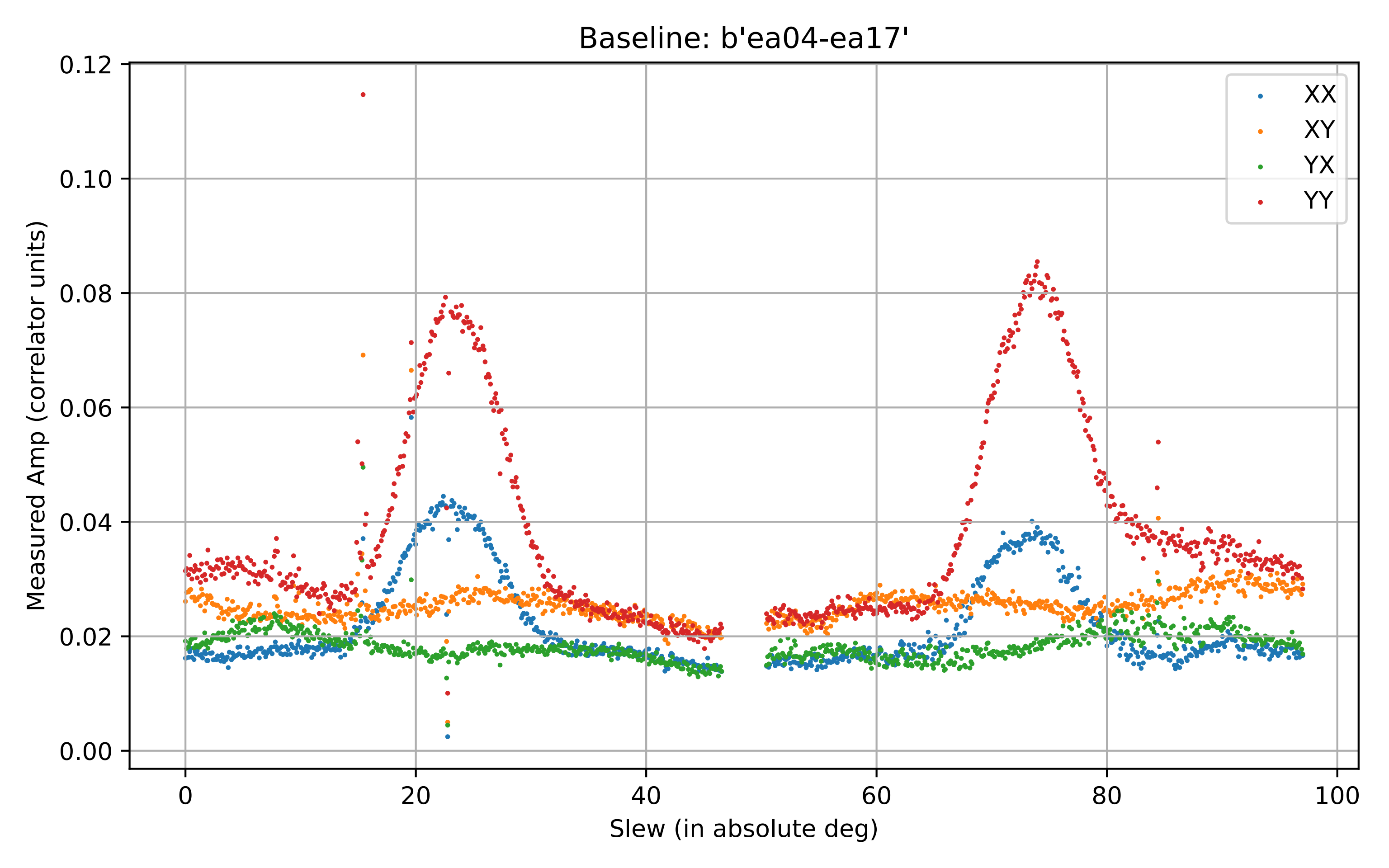
Baseline: b'ea04-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100


Baseline: b'ea04-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

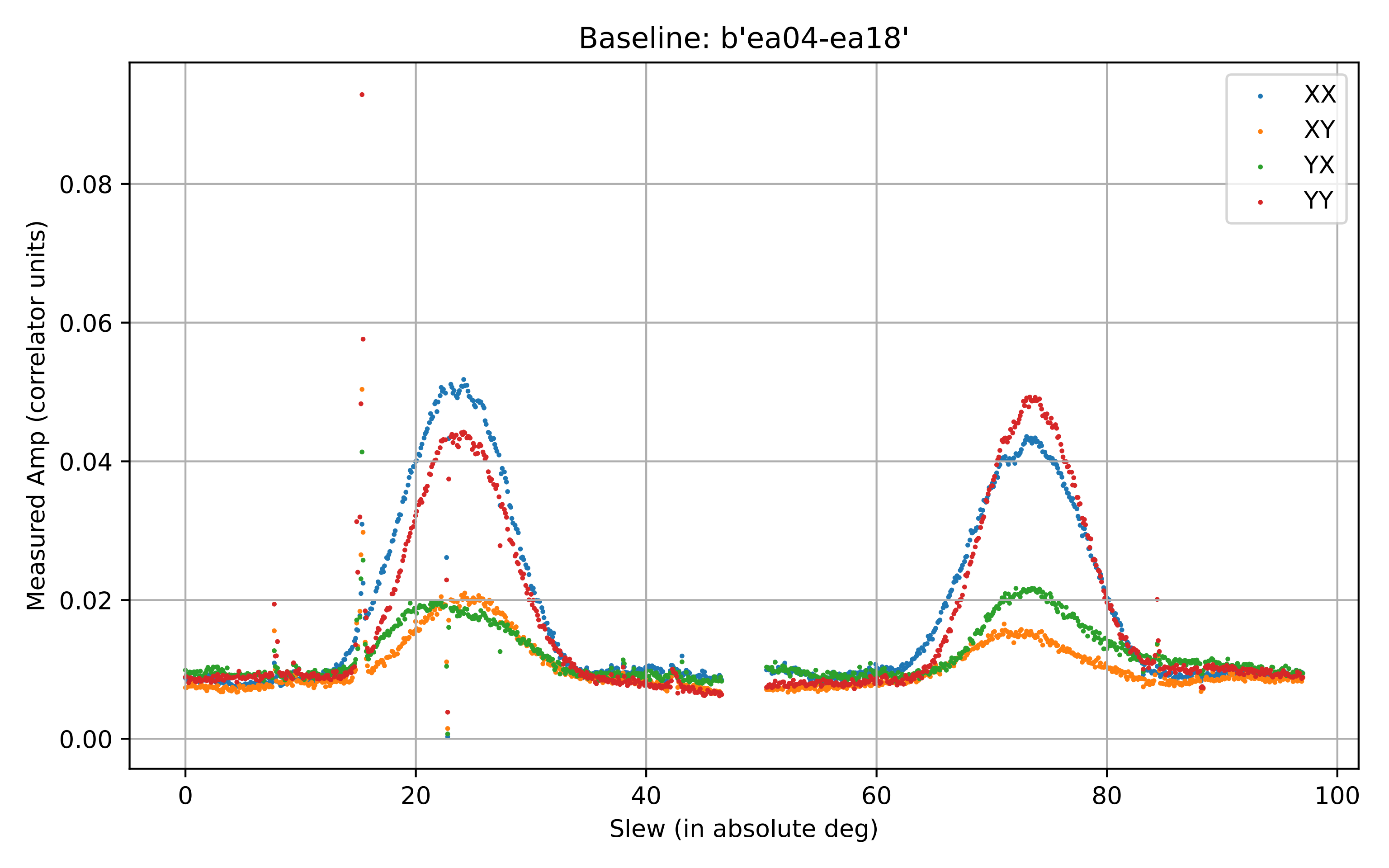


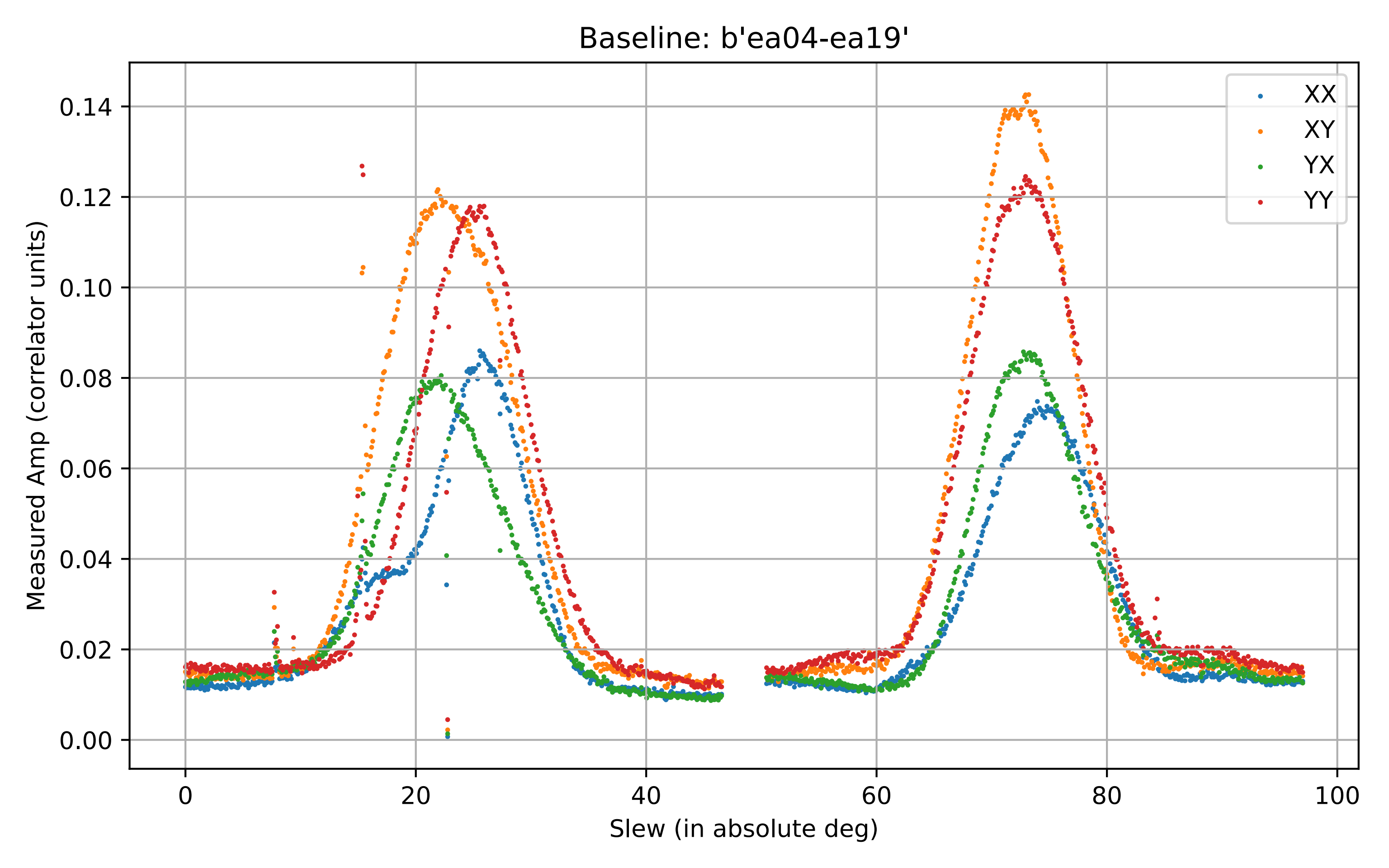
Baseline: b'ea04-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)

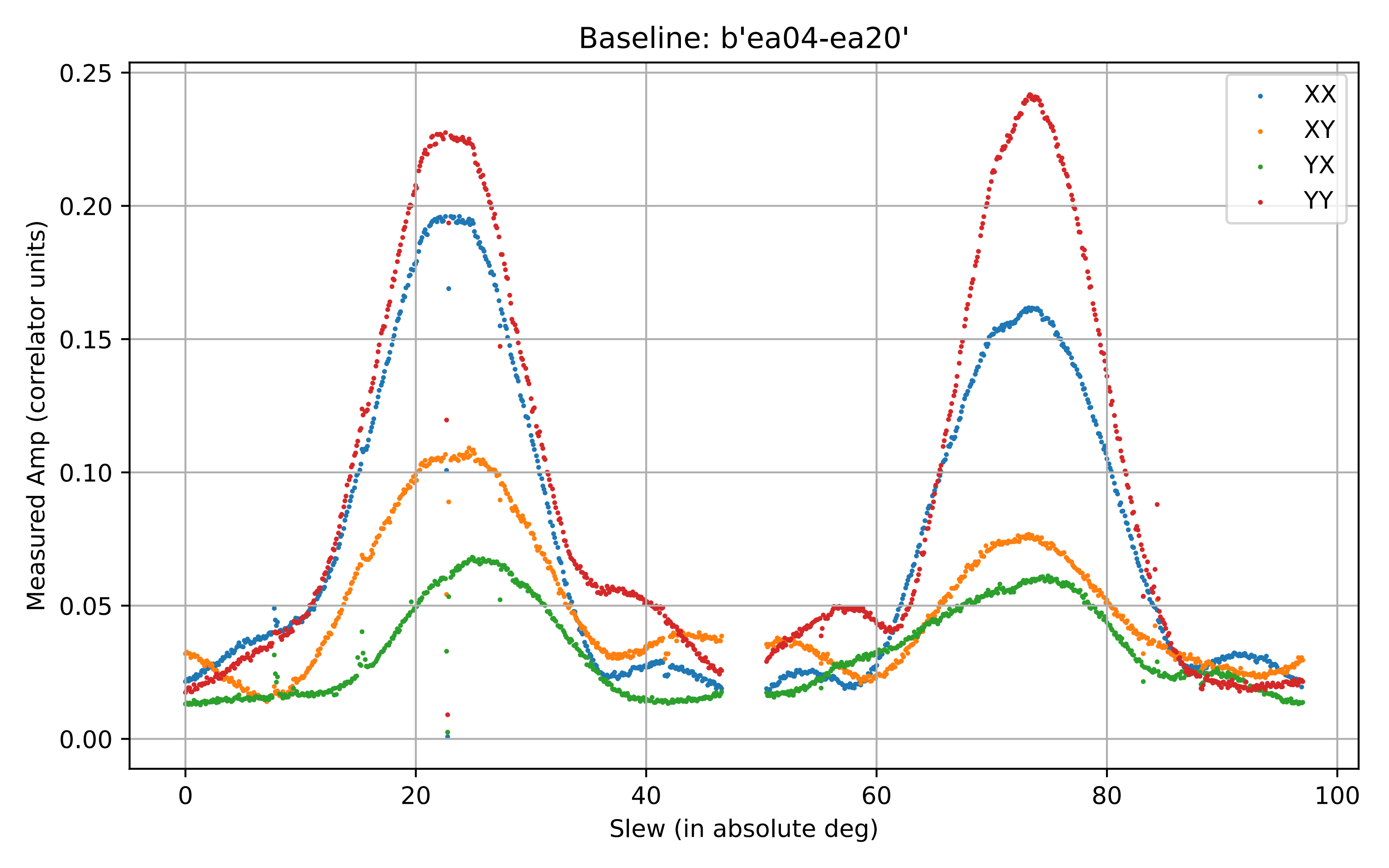

Baseline: b'ea04-ea16'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
Slew (in absolute deg)

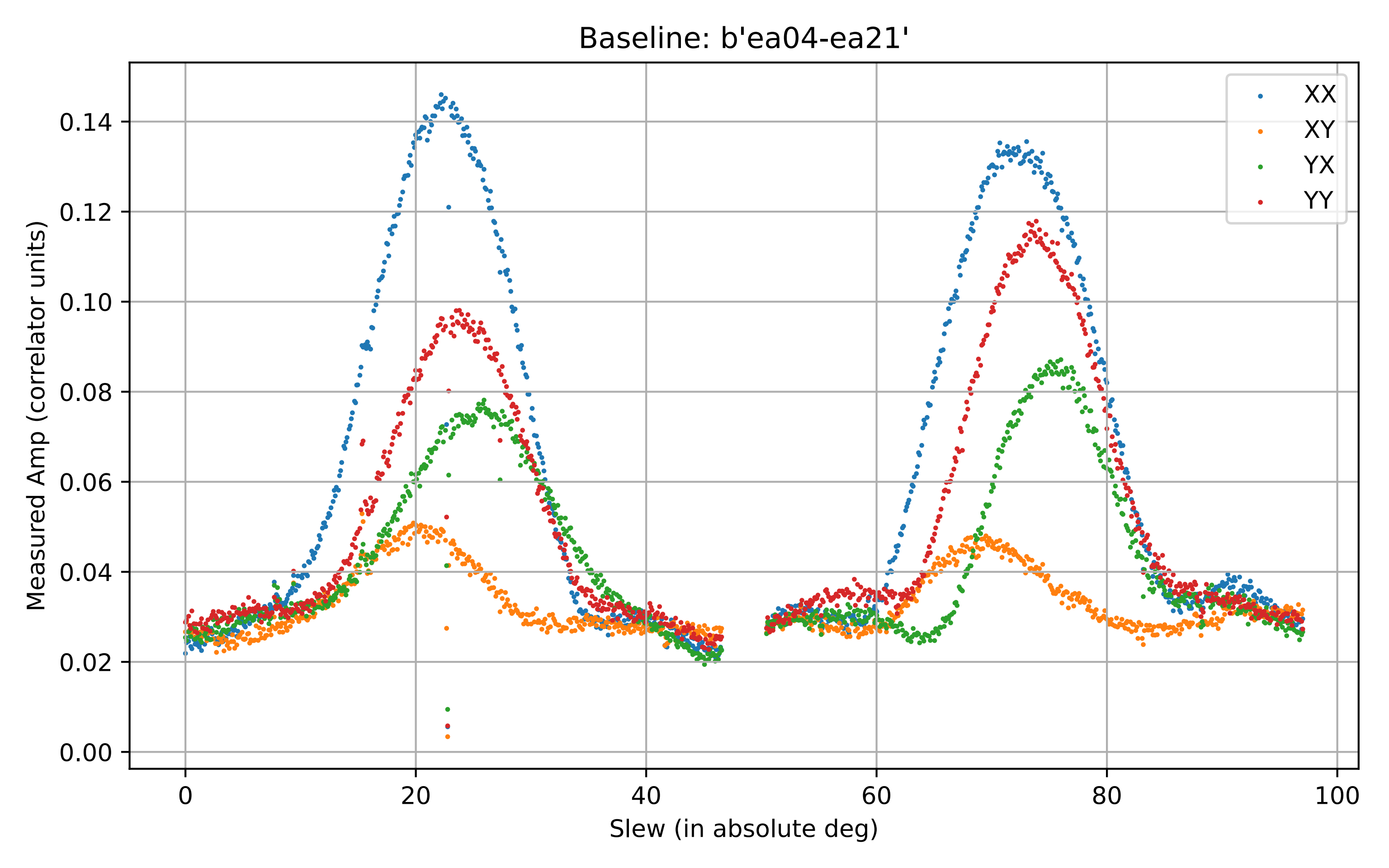


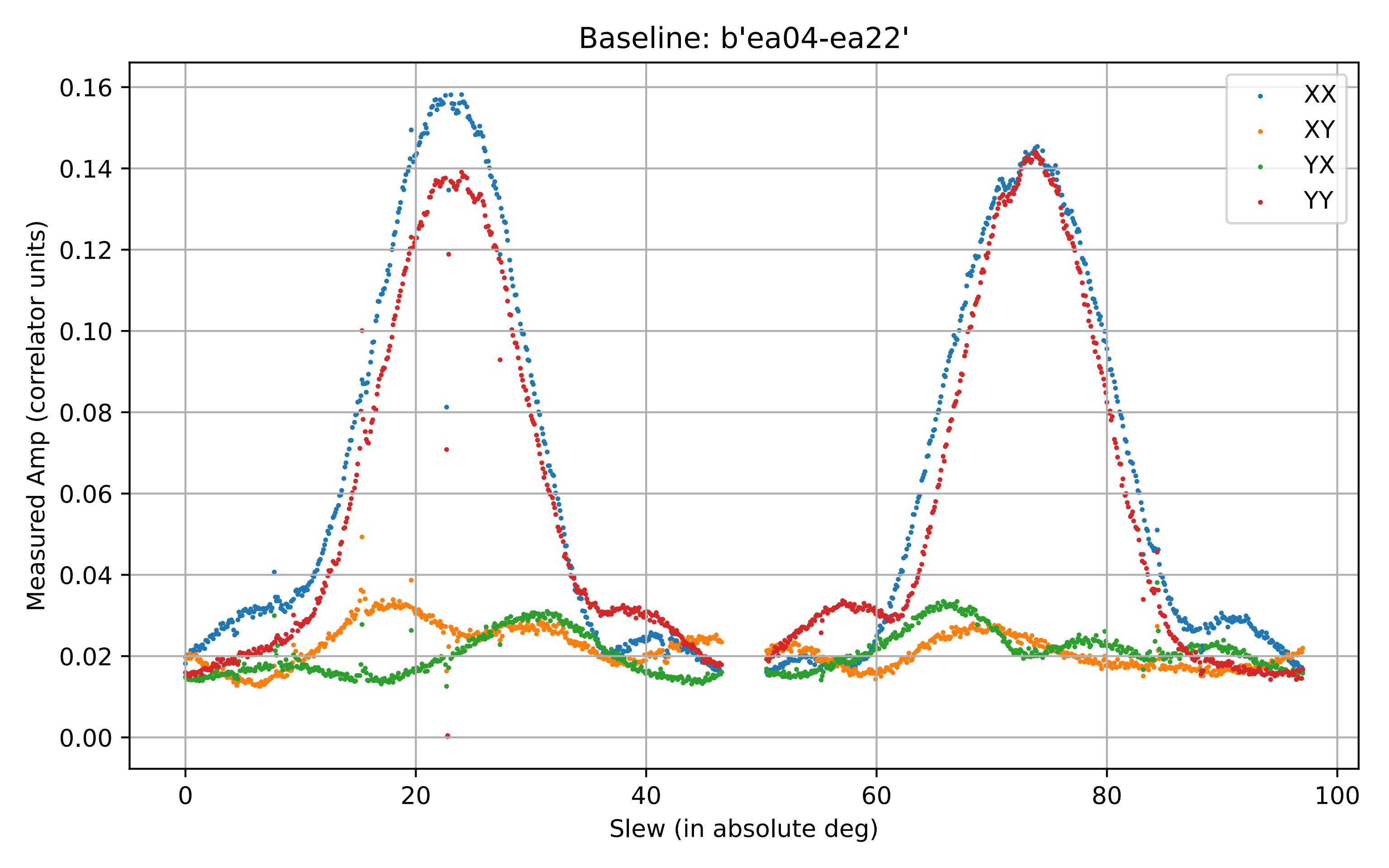
Baseline: b'ea04-ea17'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
Slew (in absolute deg)
0
20
40
60
80
100
XX
XY
YX
YY


Baseline: b'ea04-ea18'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
XX
XY
YX
YY

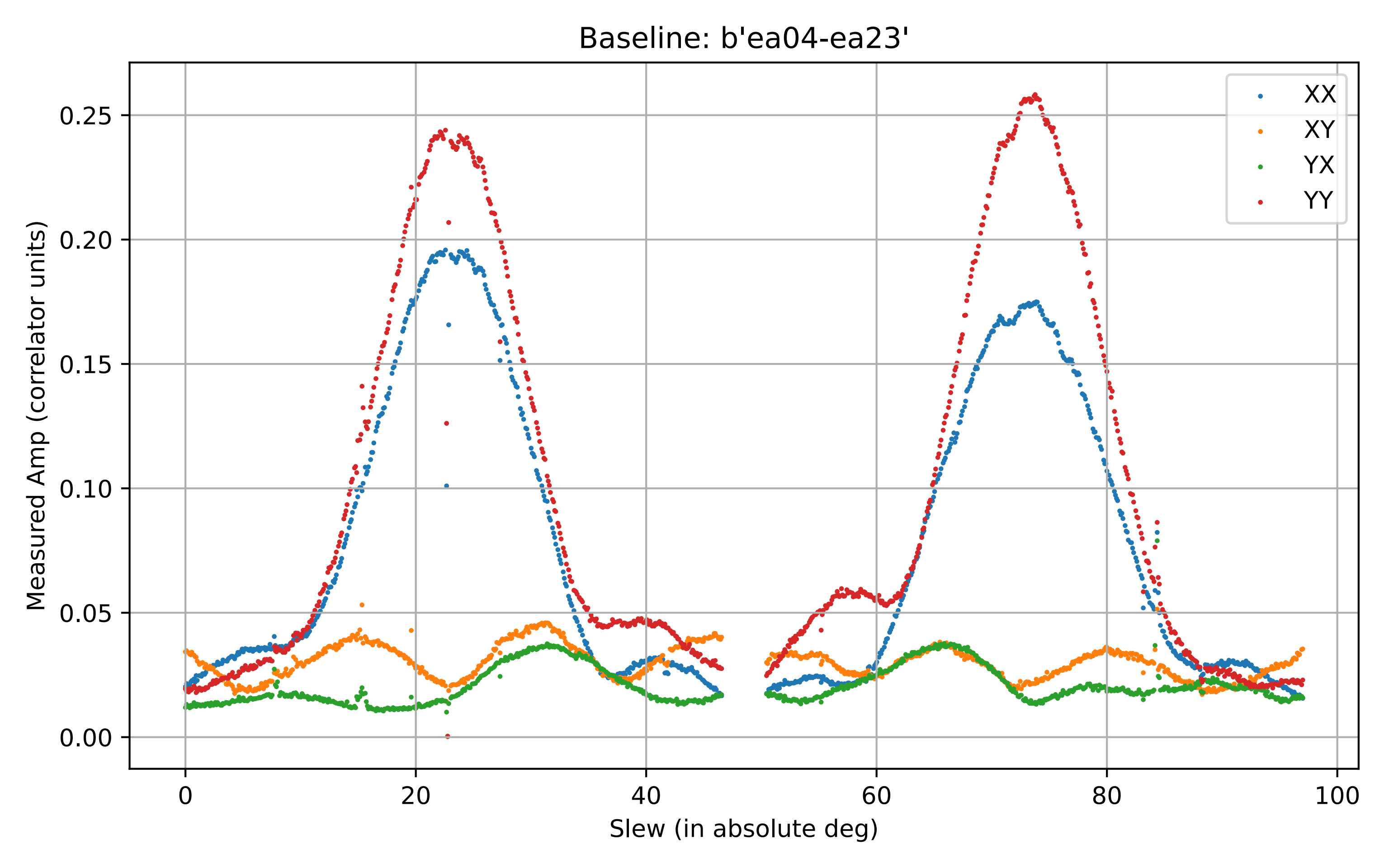

Baseline: b'ea04-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100


Baseline: b'ea04-ea20'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100

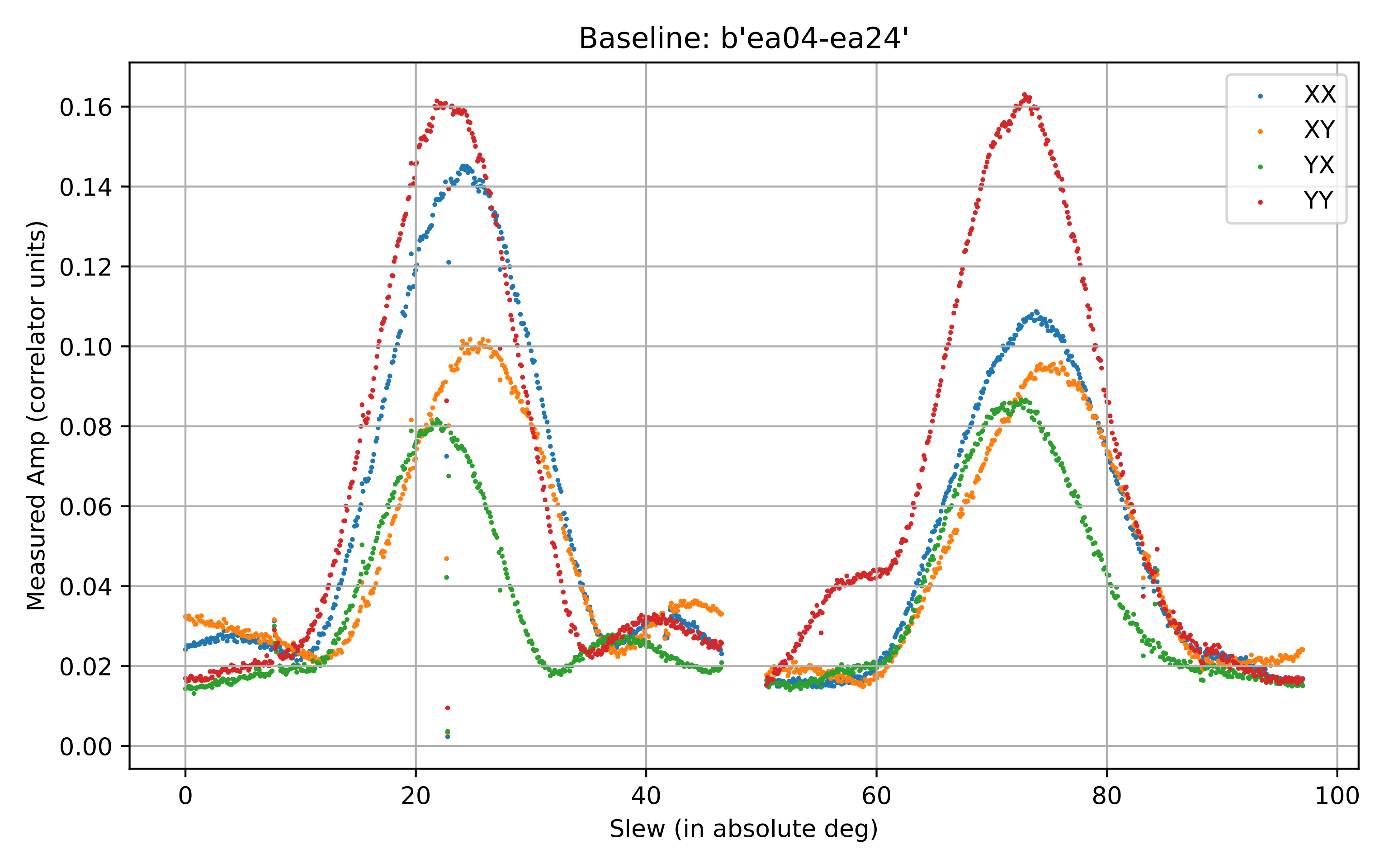

Baseline: b'ea04-ea21'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100



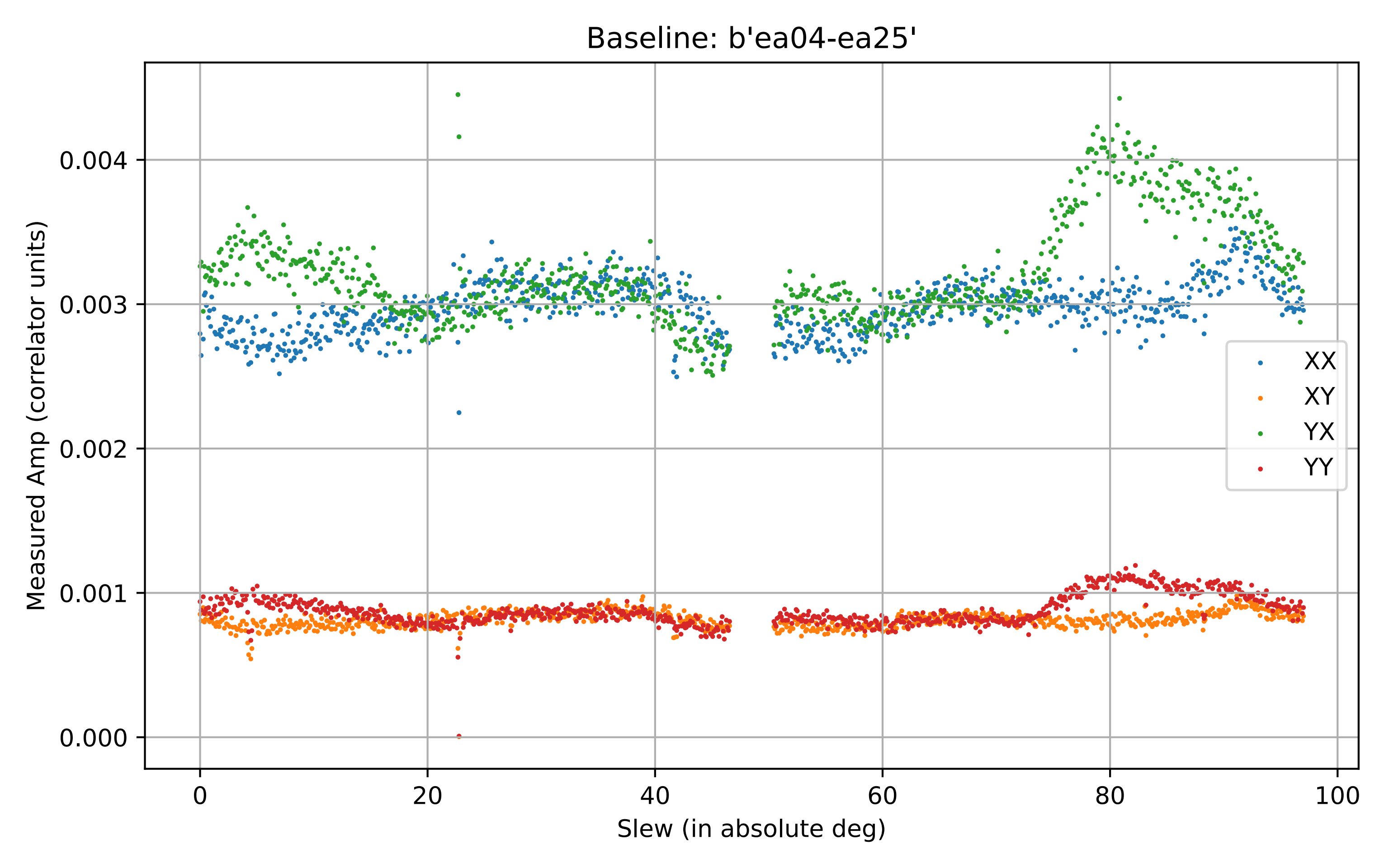
Baseline: b'ea04-ea22'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100

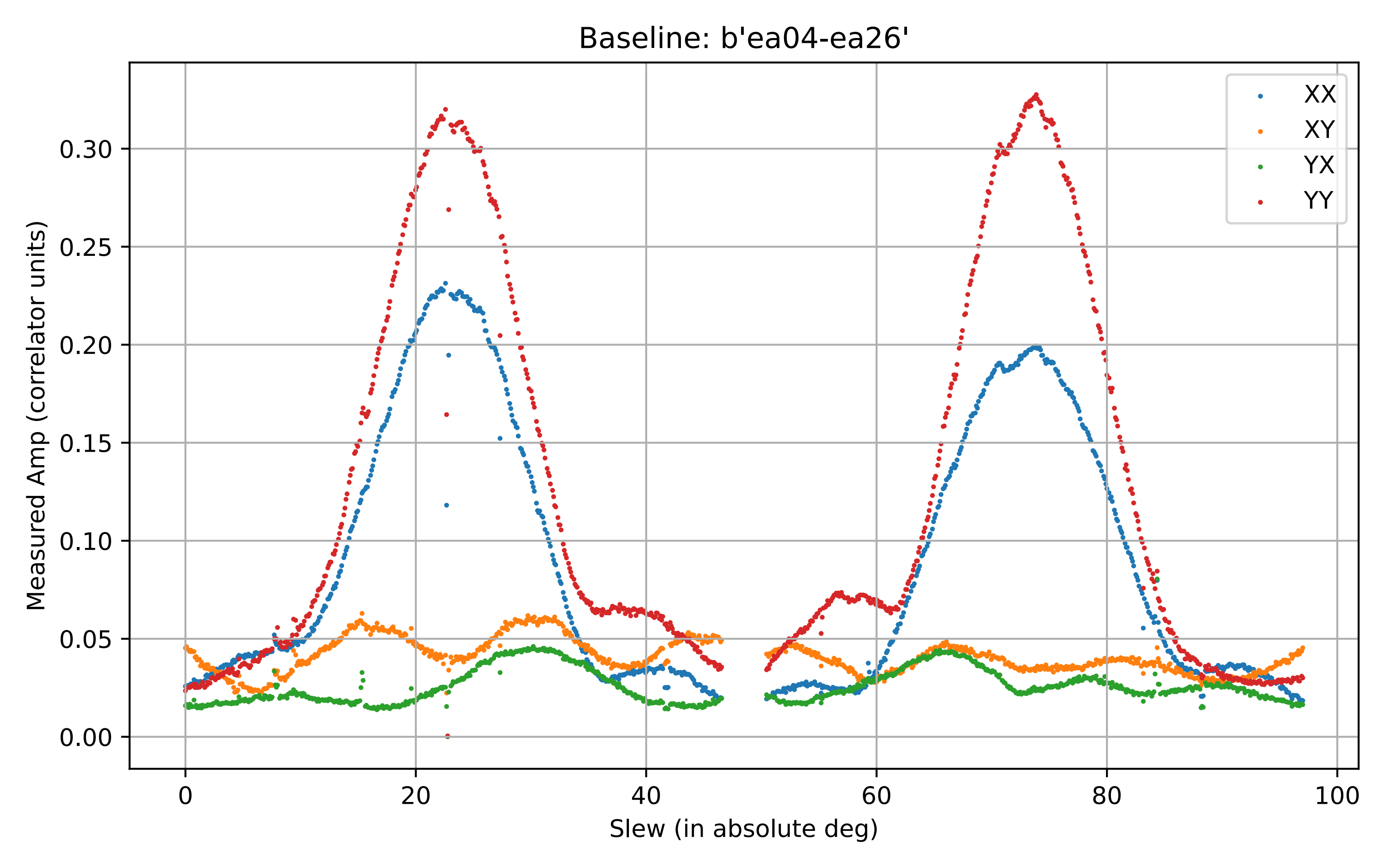


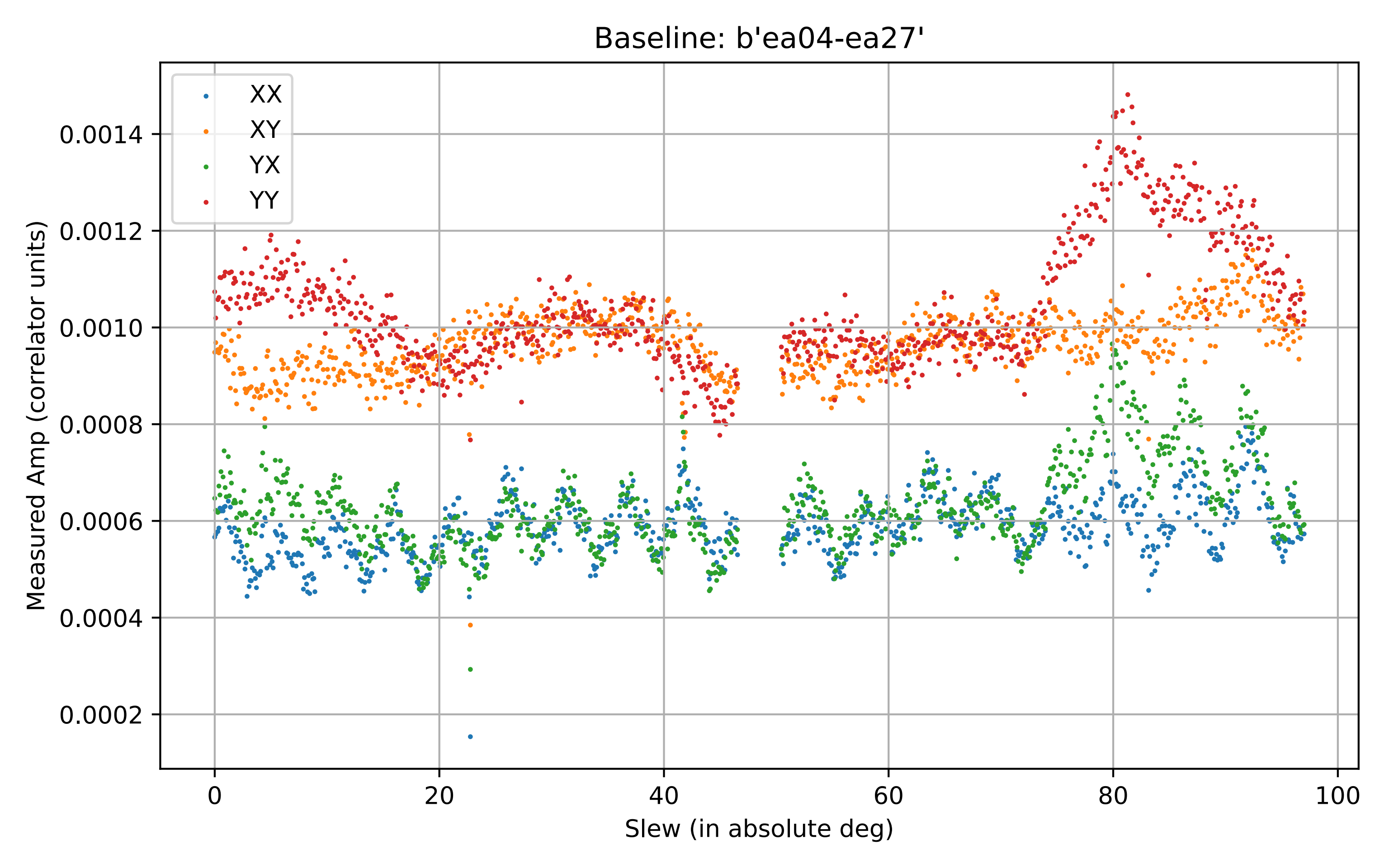
Baseline: b'ea04-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100



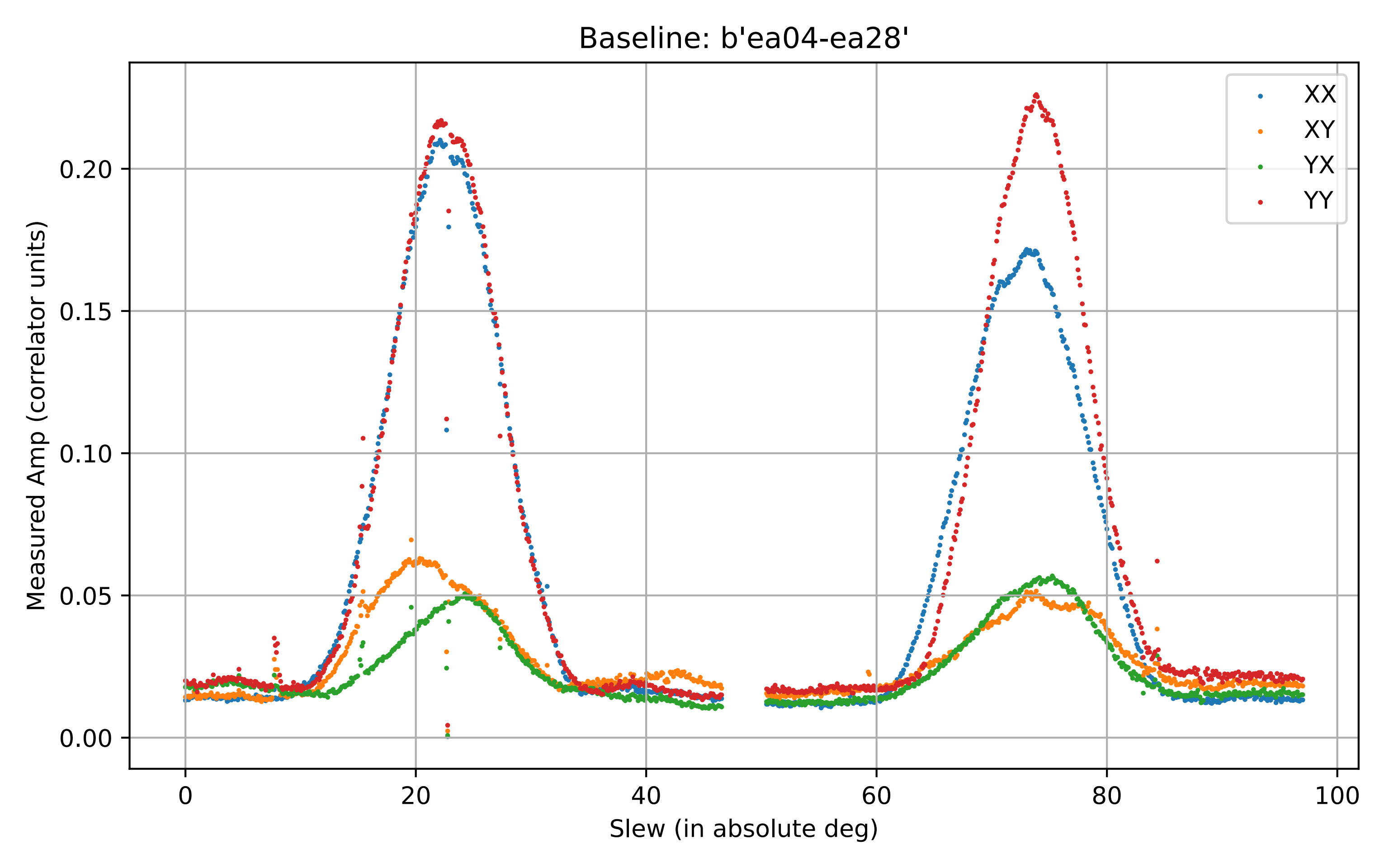
Baseline: b'ea04-ea24'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100


Baseline: b'ea04-ea25'
Measured Amp (correlator units)
0.000
0.001
0.002
0.003
0.004
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

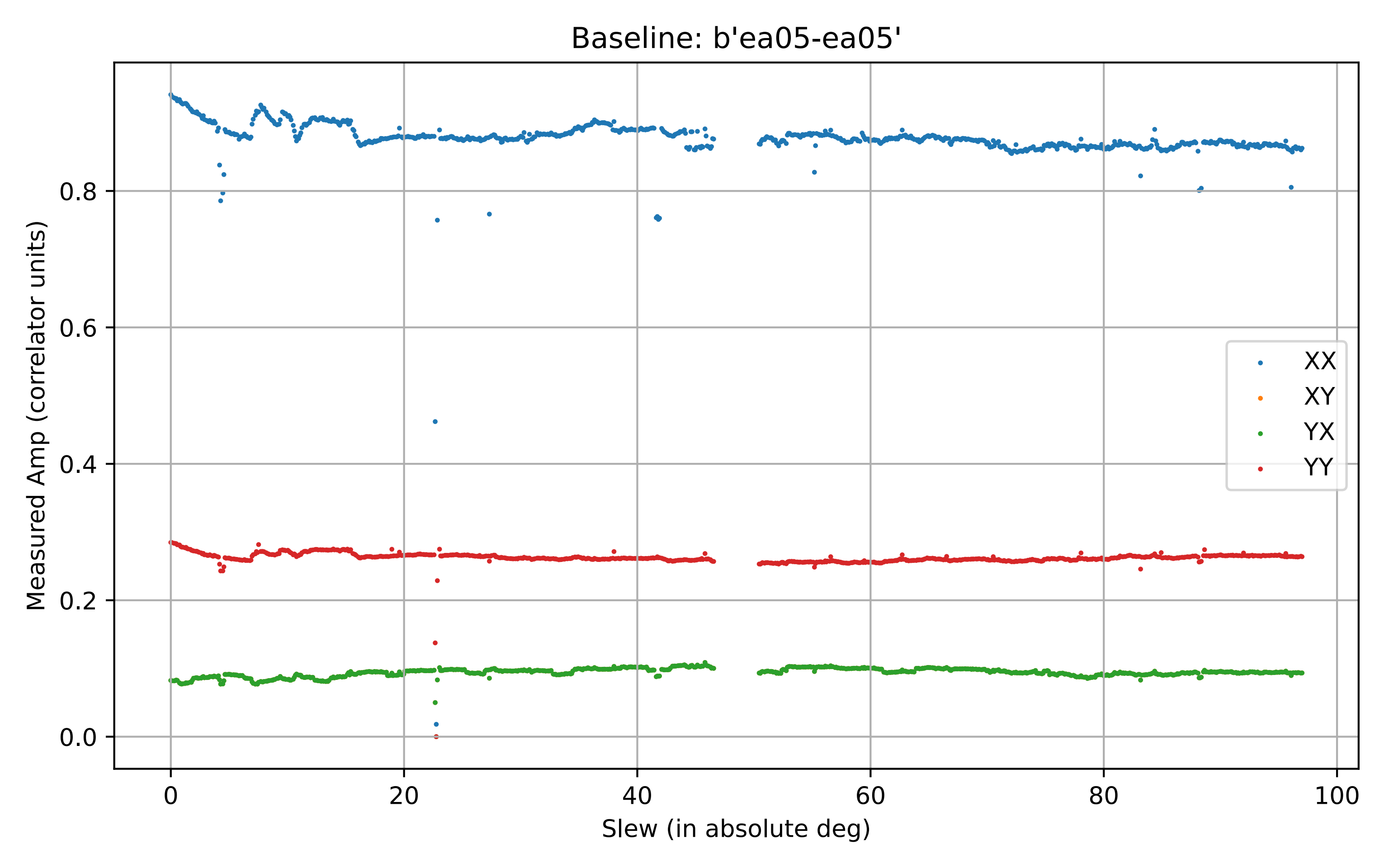

Baseline: b'ea04-ea26'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100

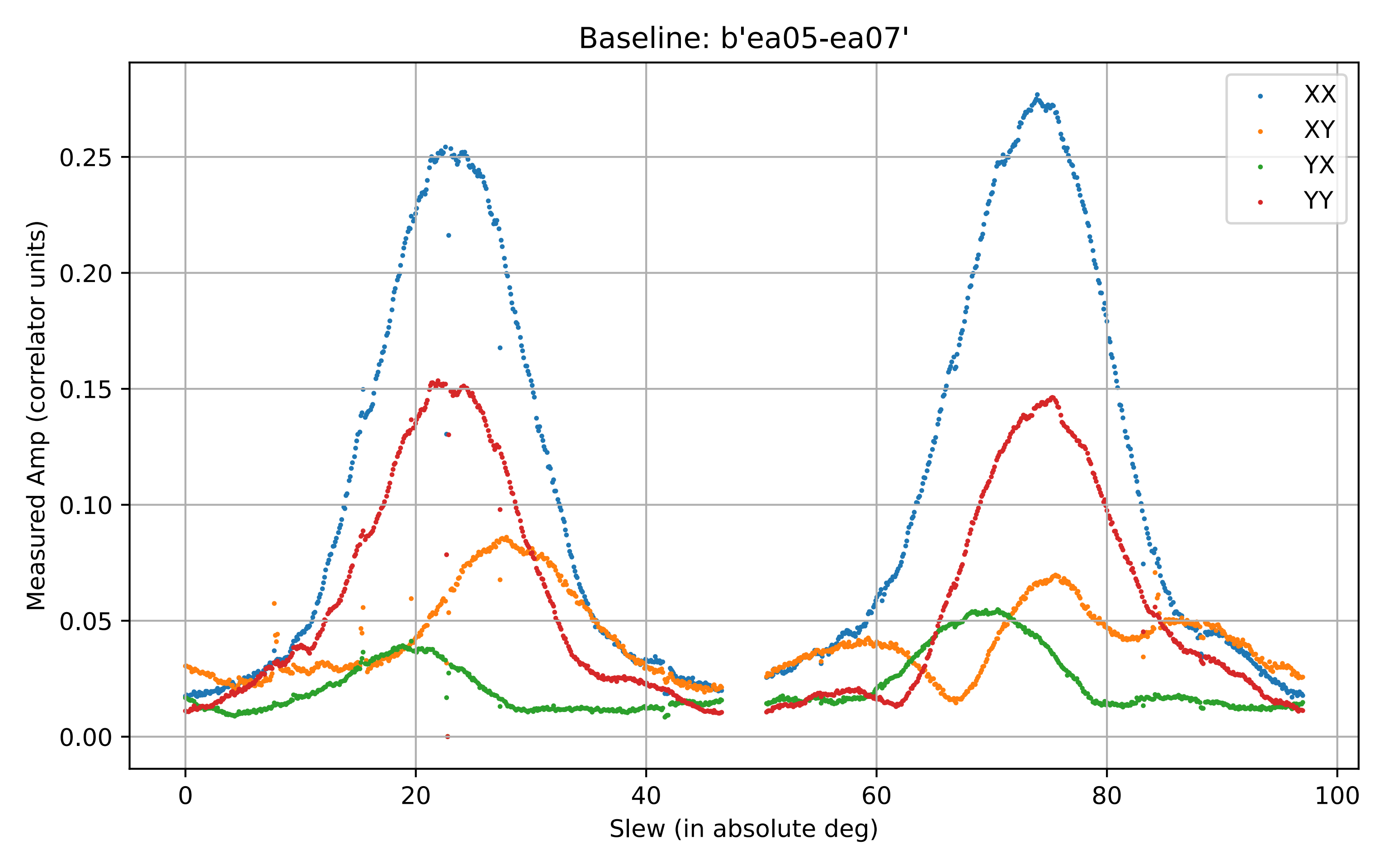


Baseline: b'ea04-ea27'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0
20
40
60
80
100
Slew (in absolute deg)

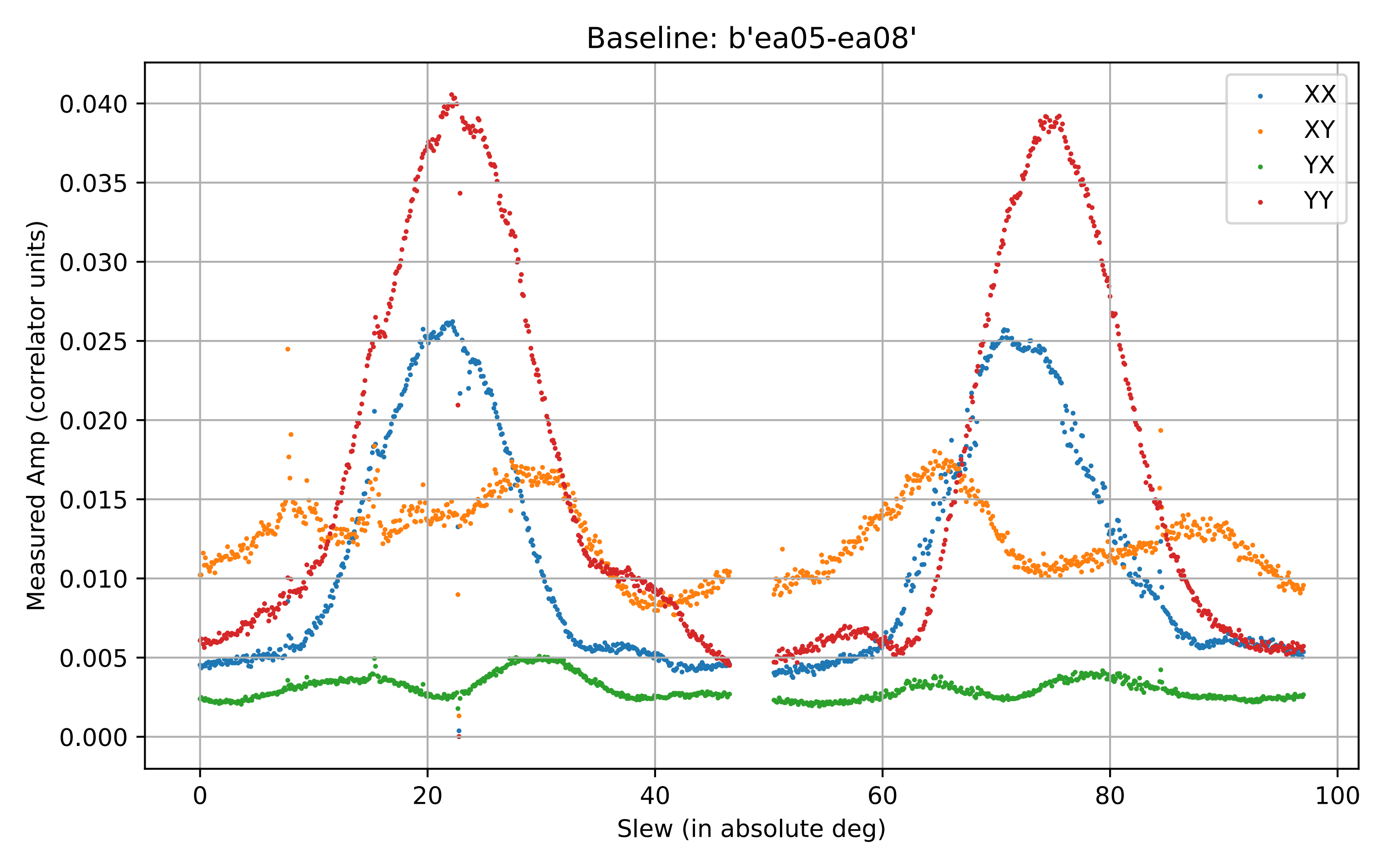


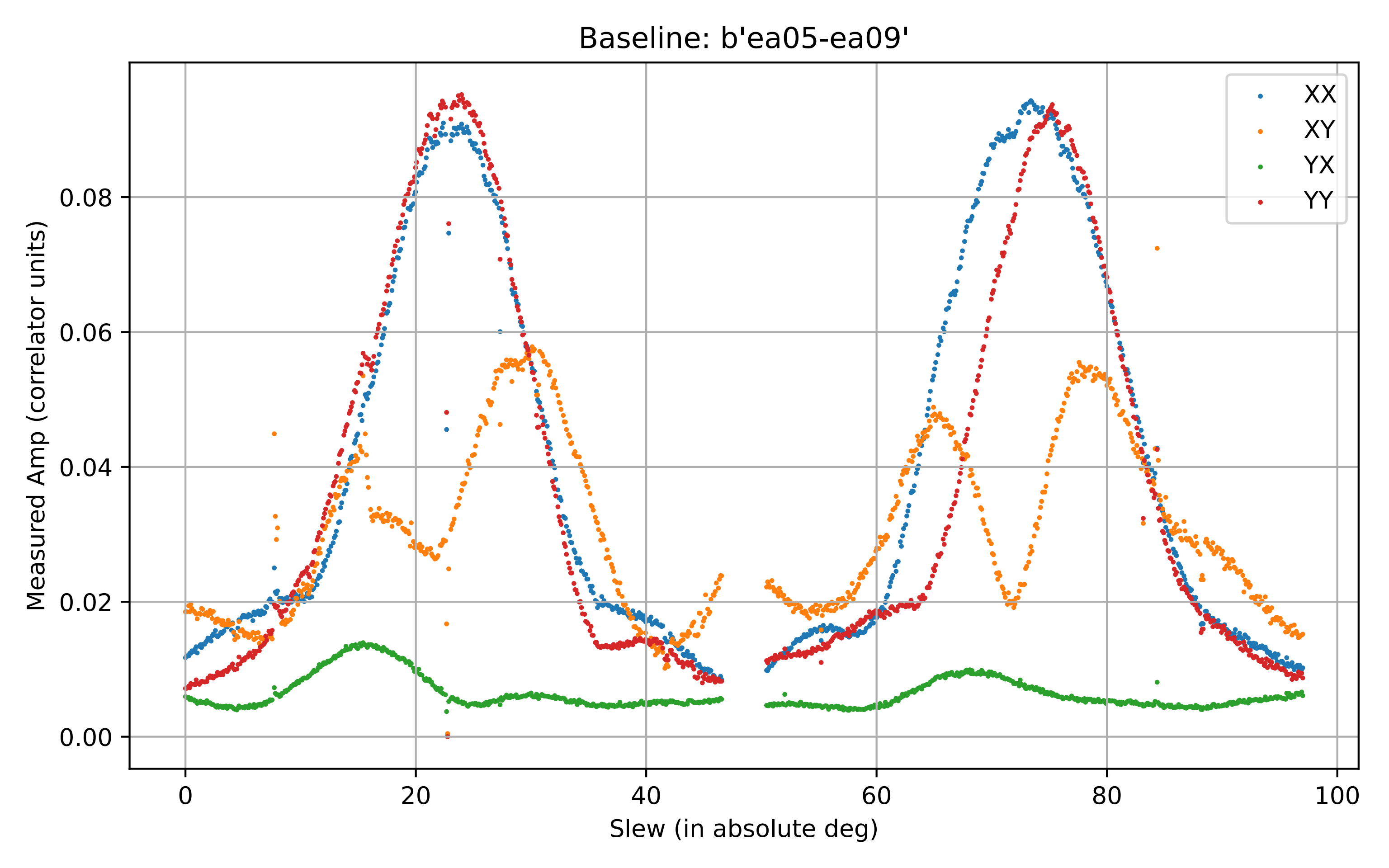
Baseline: b'ea04-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100


Baseline: b'ea05-ea05'
Measured Amp (correlator units)
0.0
0.2
0.4
0.6
0.8
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

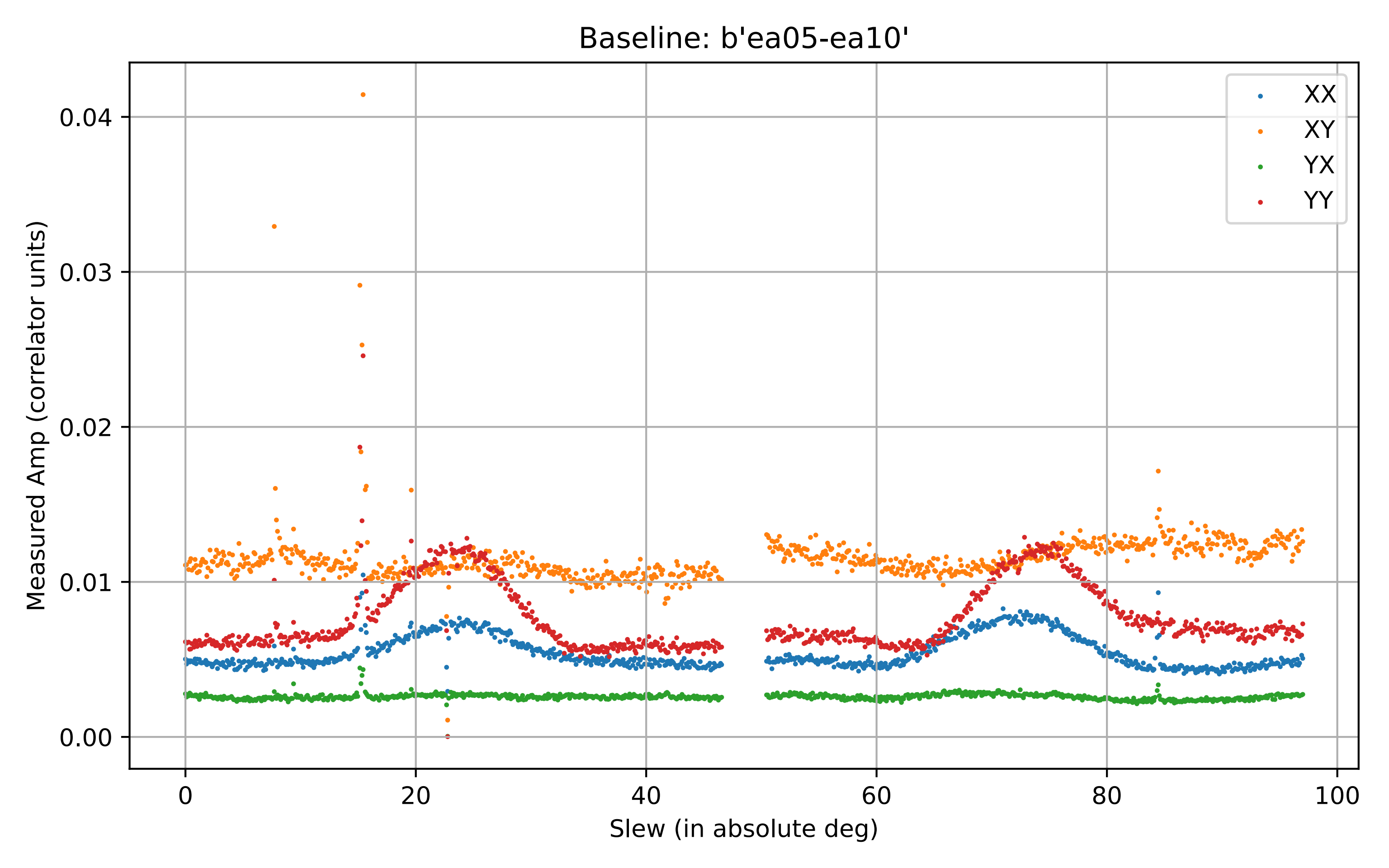


Baseline: b'ea05-ea07'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)

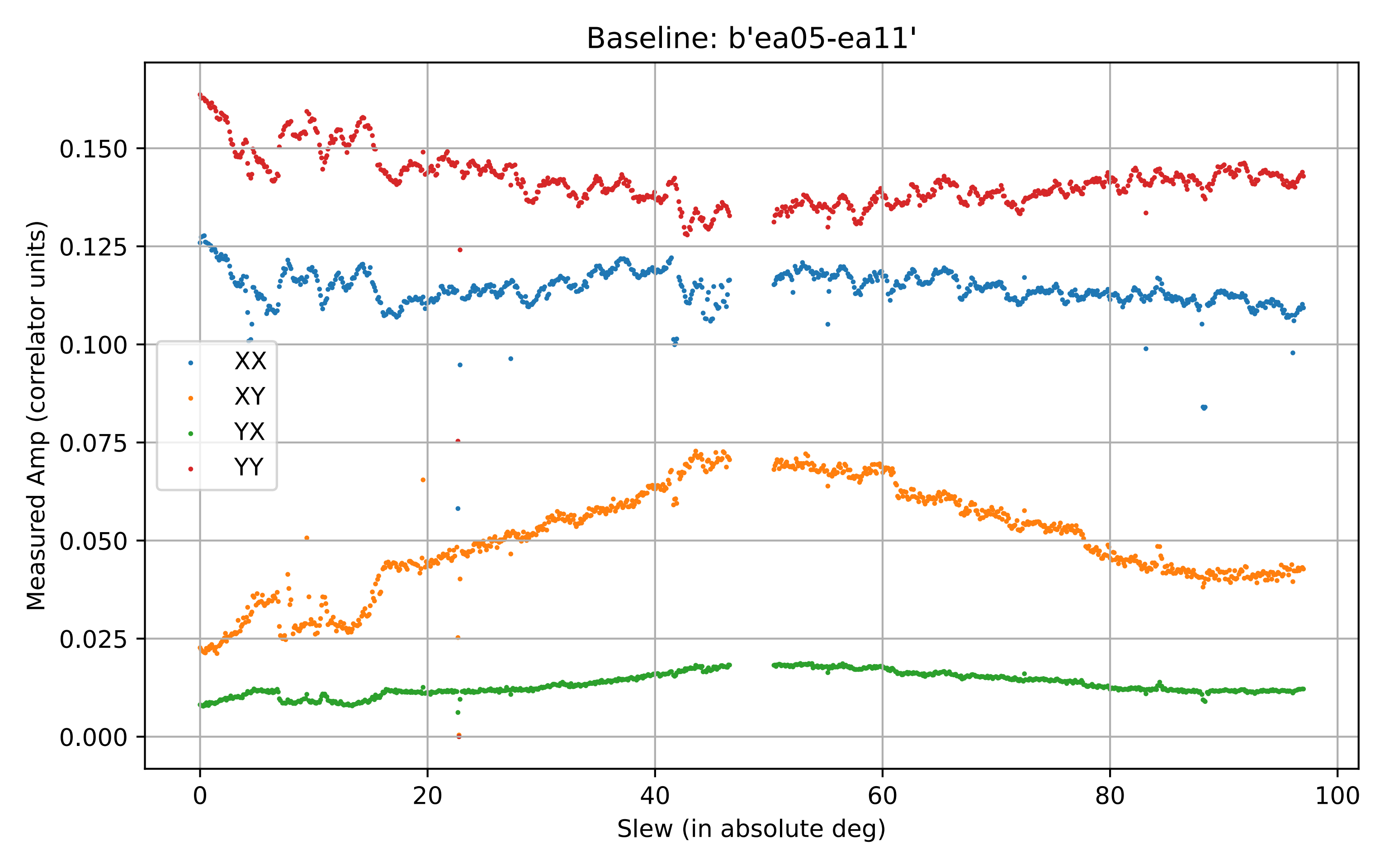

Baseline: b'ea05-ea08'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0.035
0.040
0
20
40
60
80
100
Slew (in absolute deg)



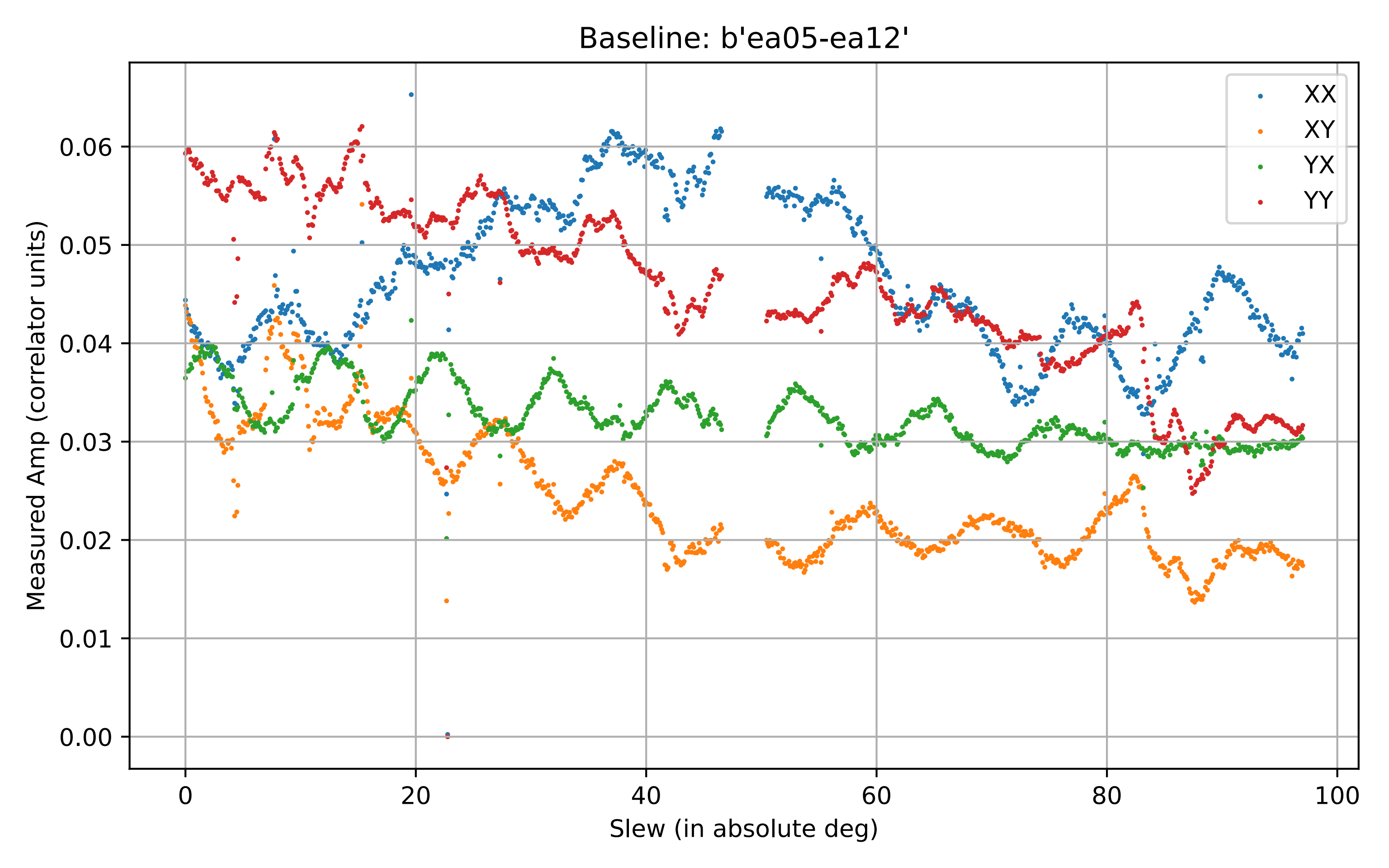
Baseline: b'ea05-ea09'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)

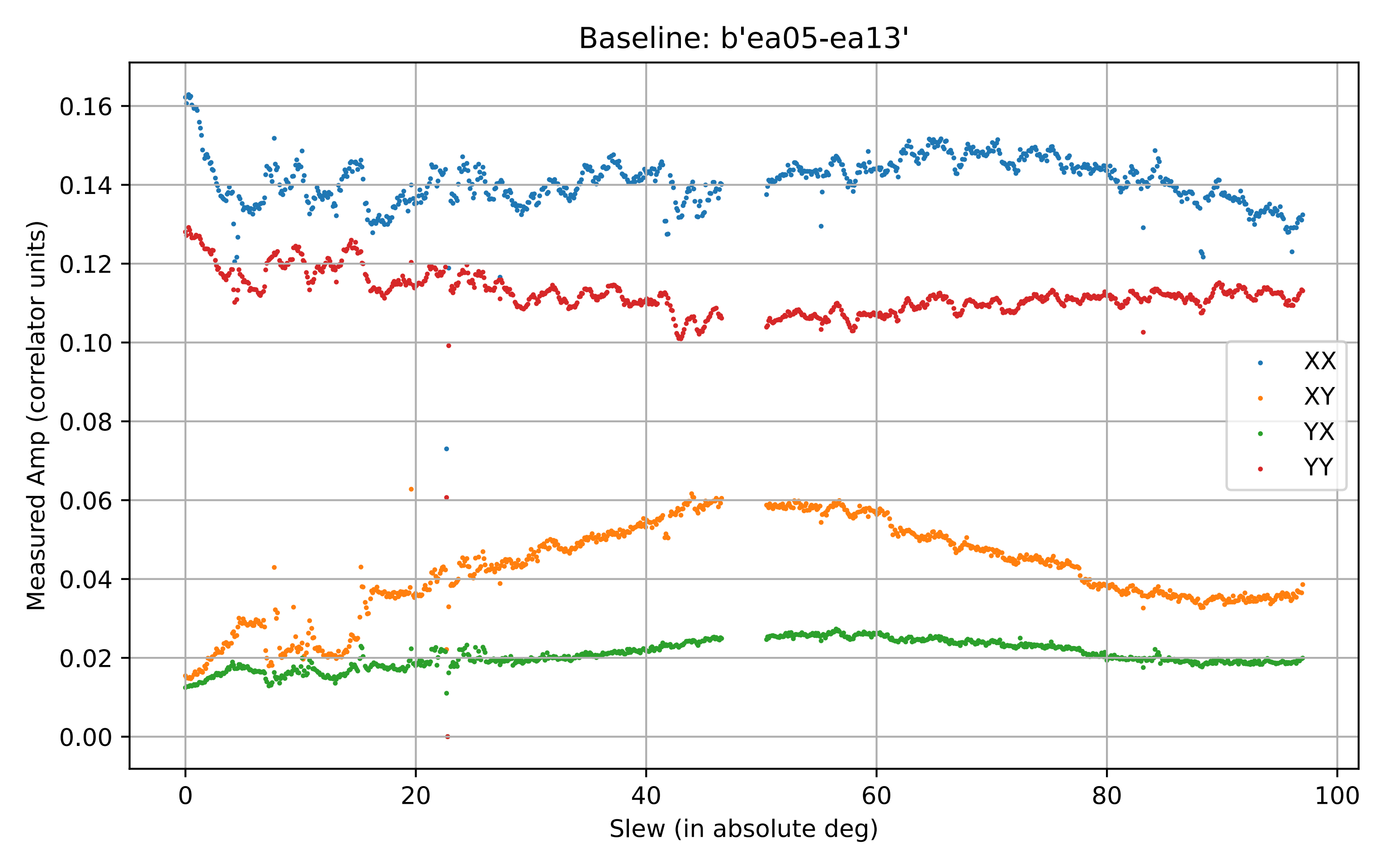


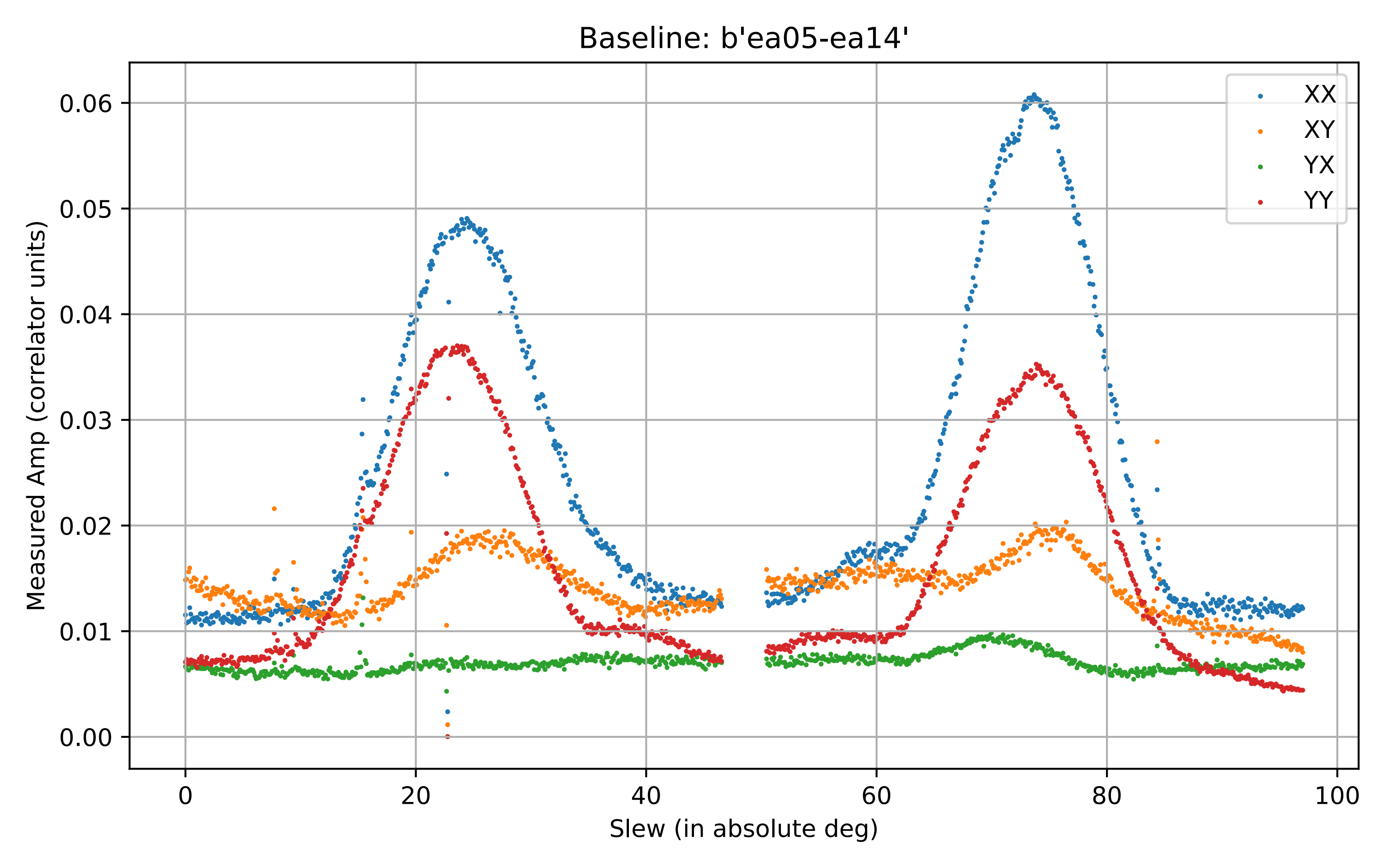
Baseline: b'ea05-ea10'
XX
XY
YX
YY
0.04
0.03
0.02
0.01
0.00
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)



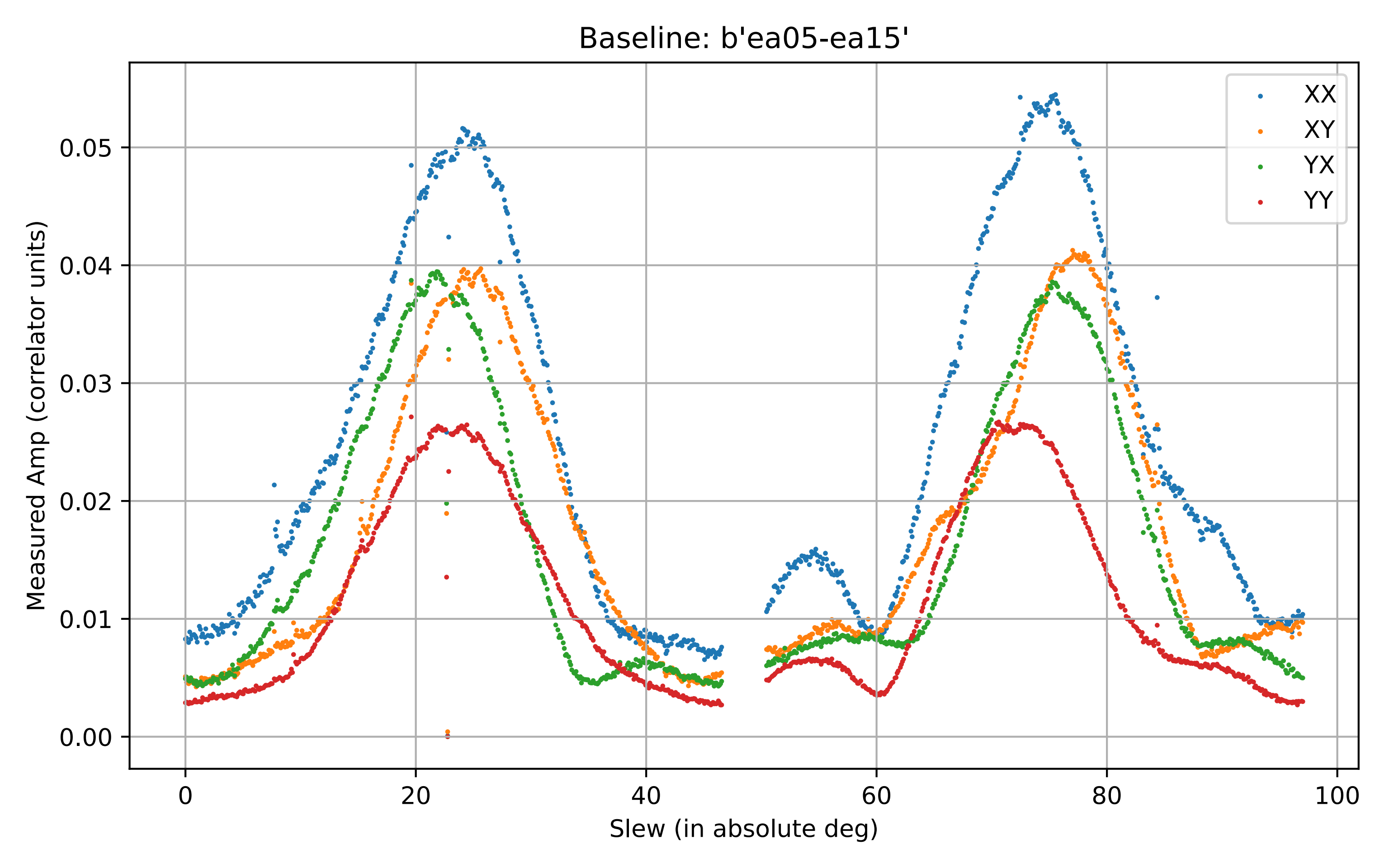
Baseline: b'ea05-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0
20
40
60
80
100
XX
XY
YX
YY


Baseline: b'ea05-ea12'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100

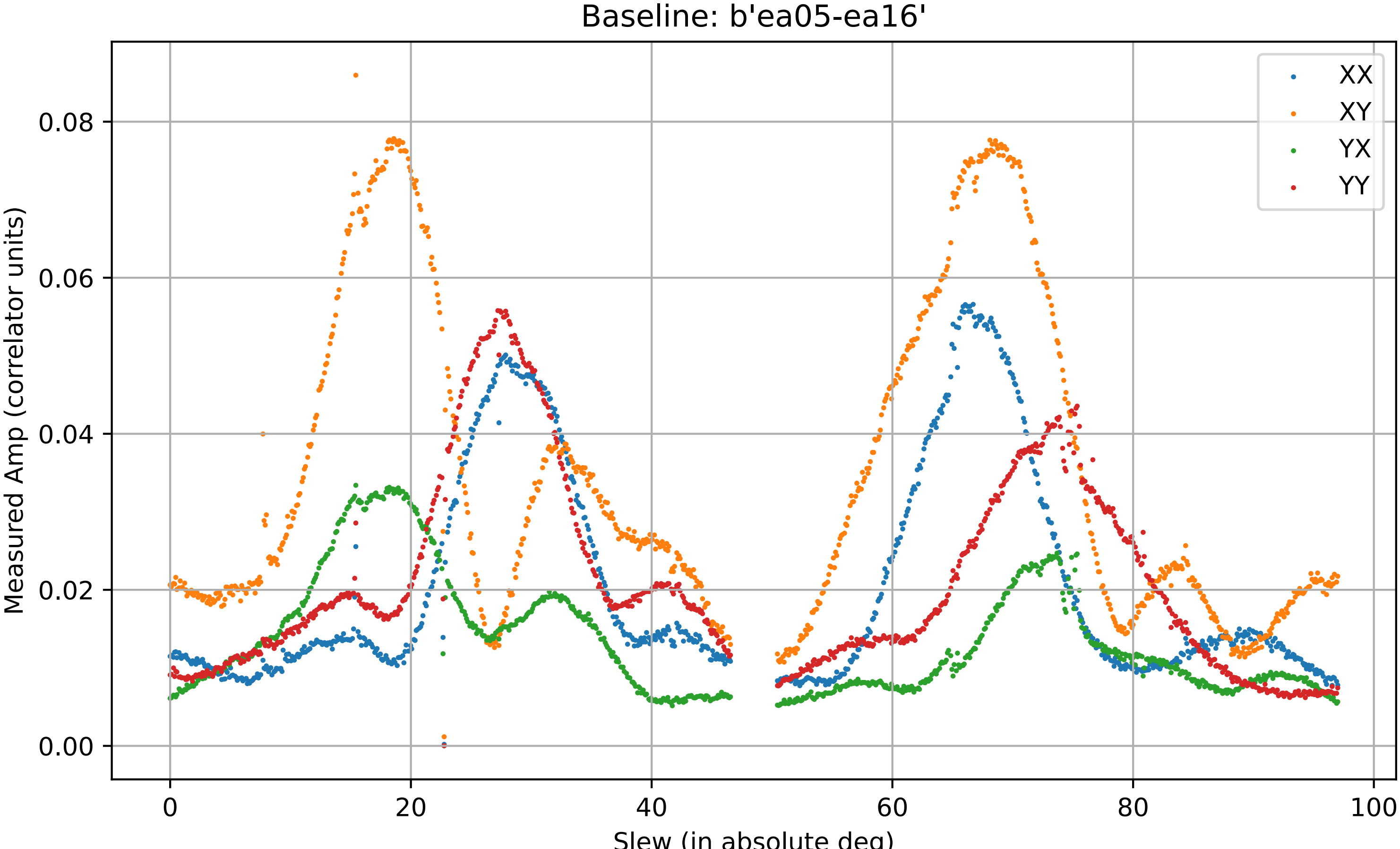

Baseline: b'ea05-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100

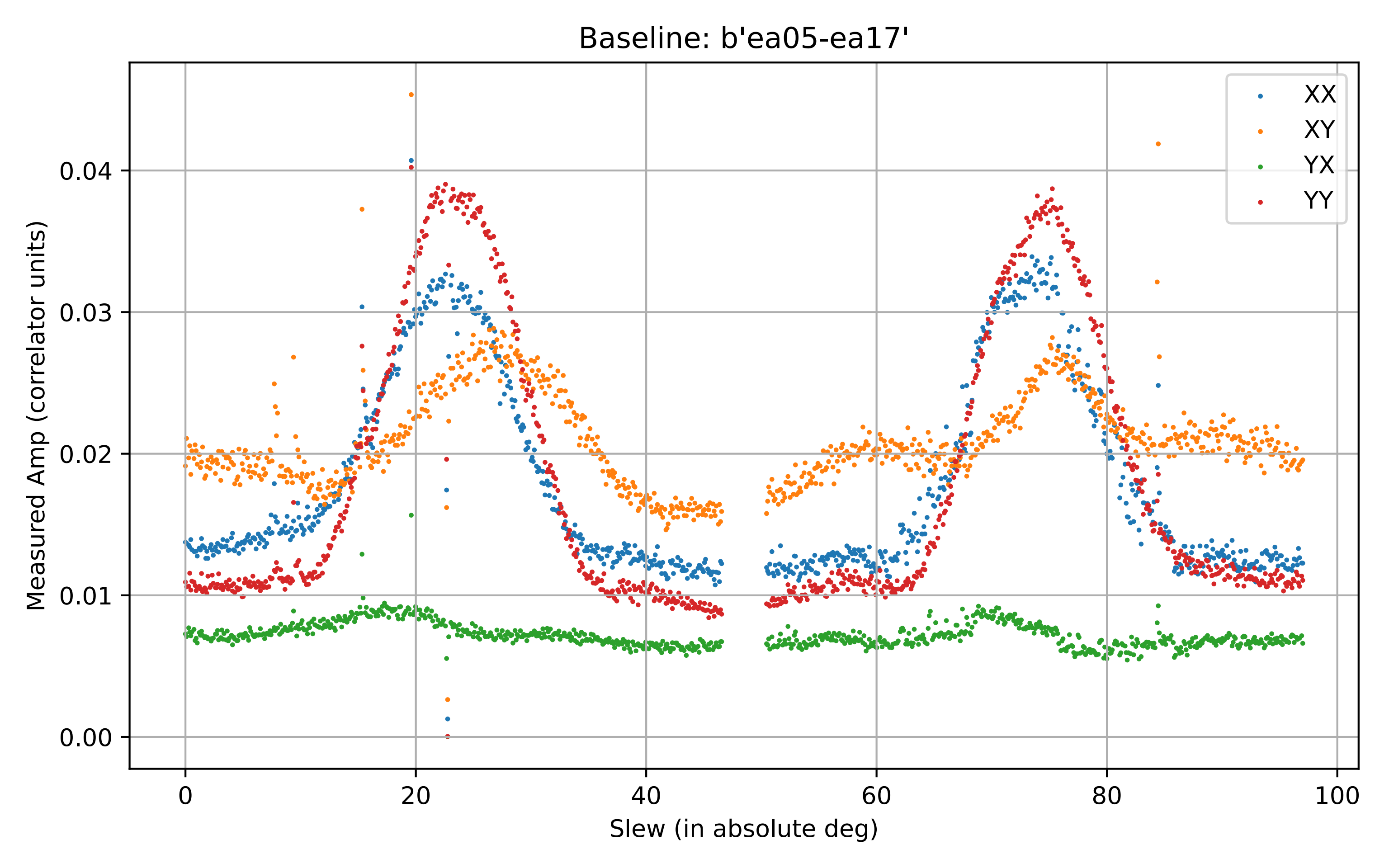


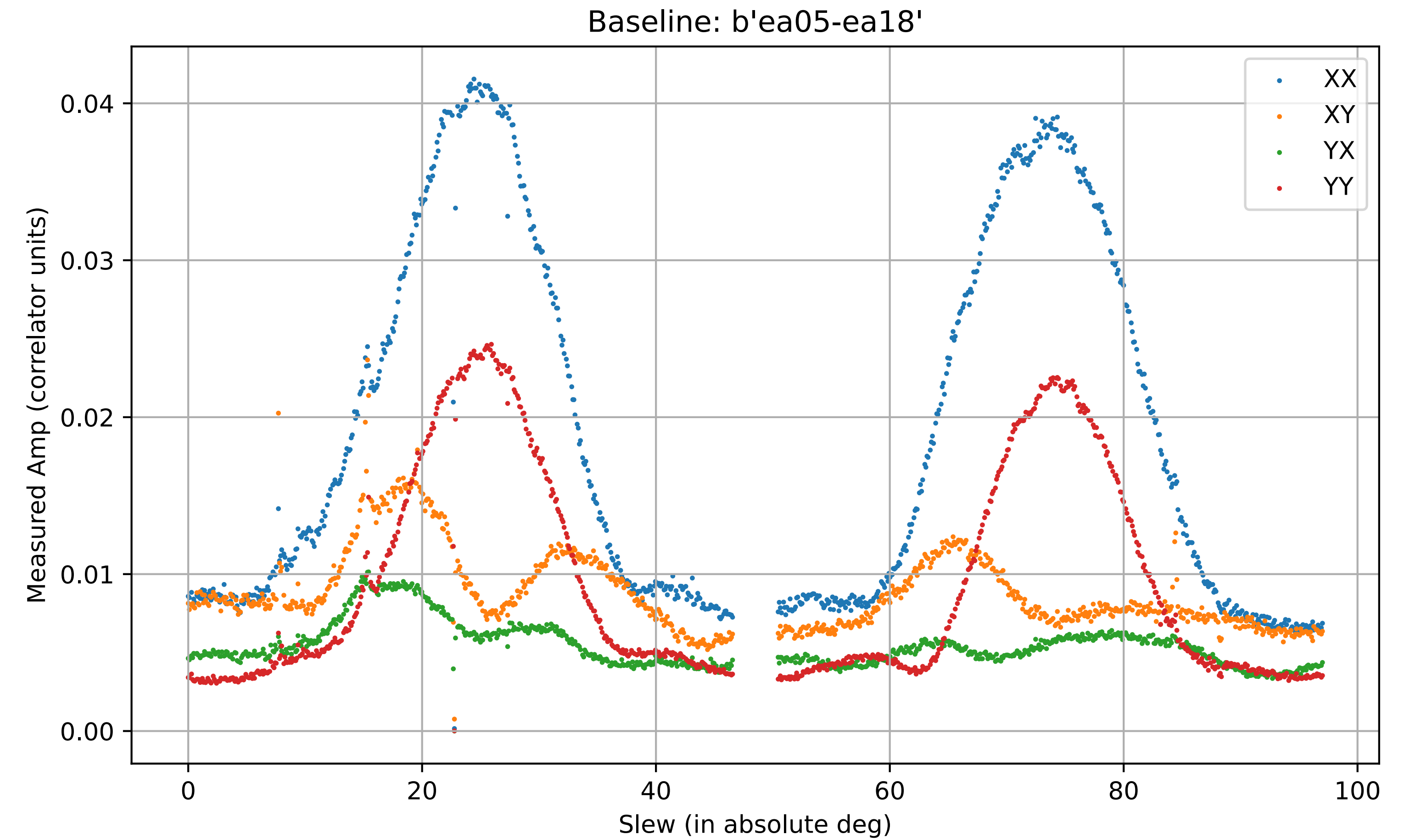
Baseline: b'ea05-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100
Slew (in absolute deg)

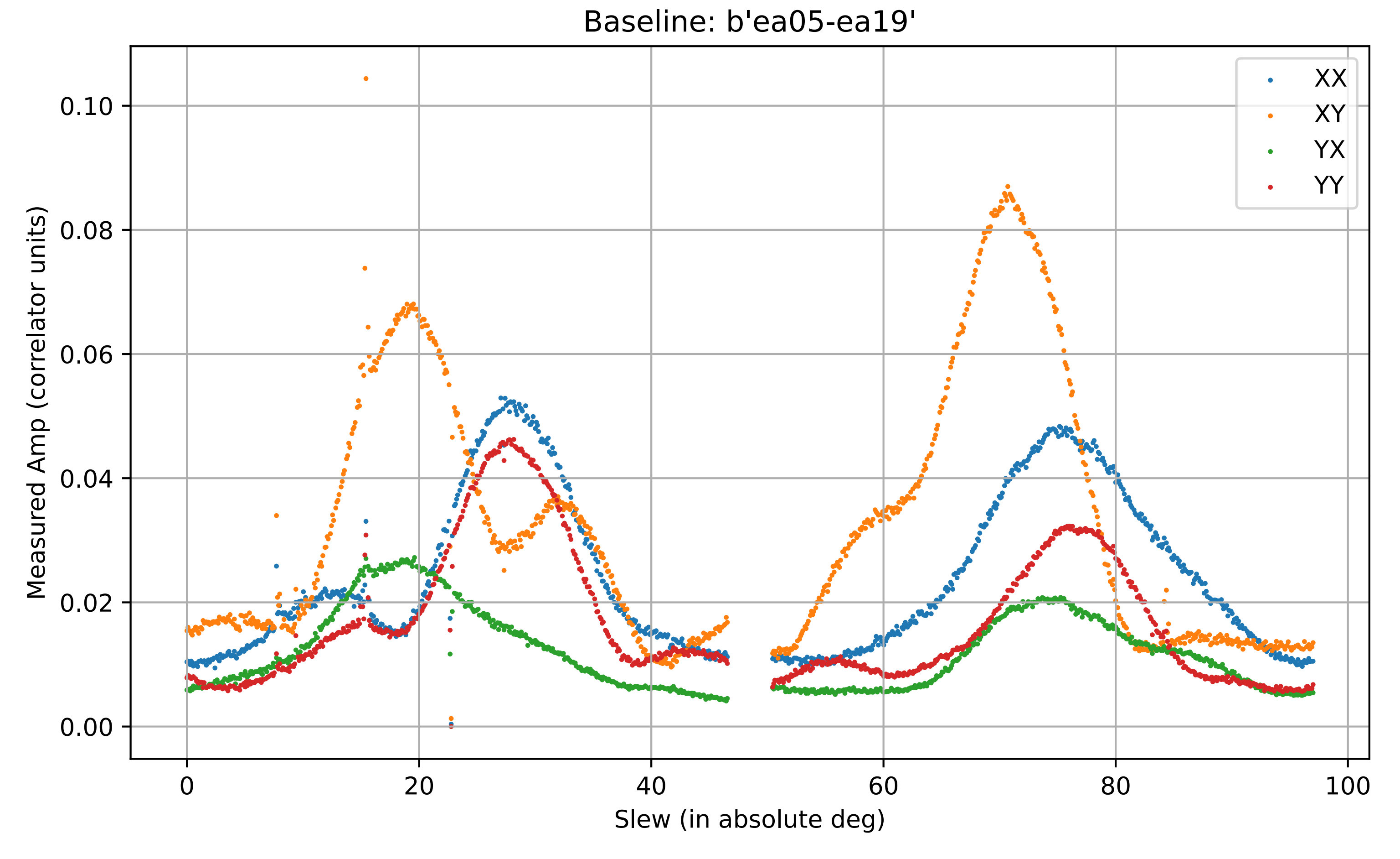


Baseline: b'ea05-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
Slew (in absolute deg)
0
20
40
60
80
100

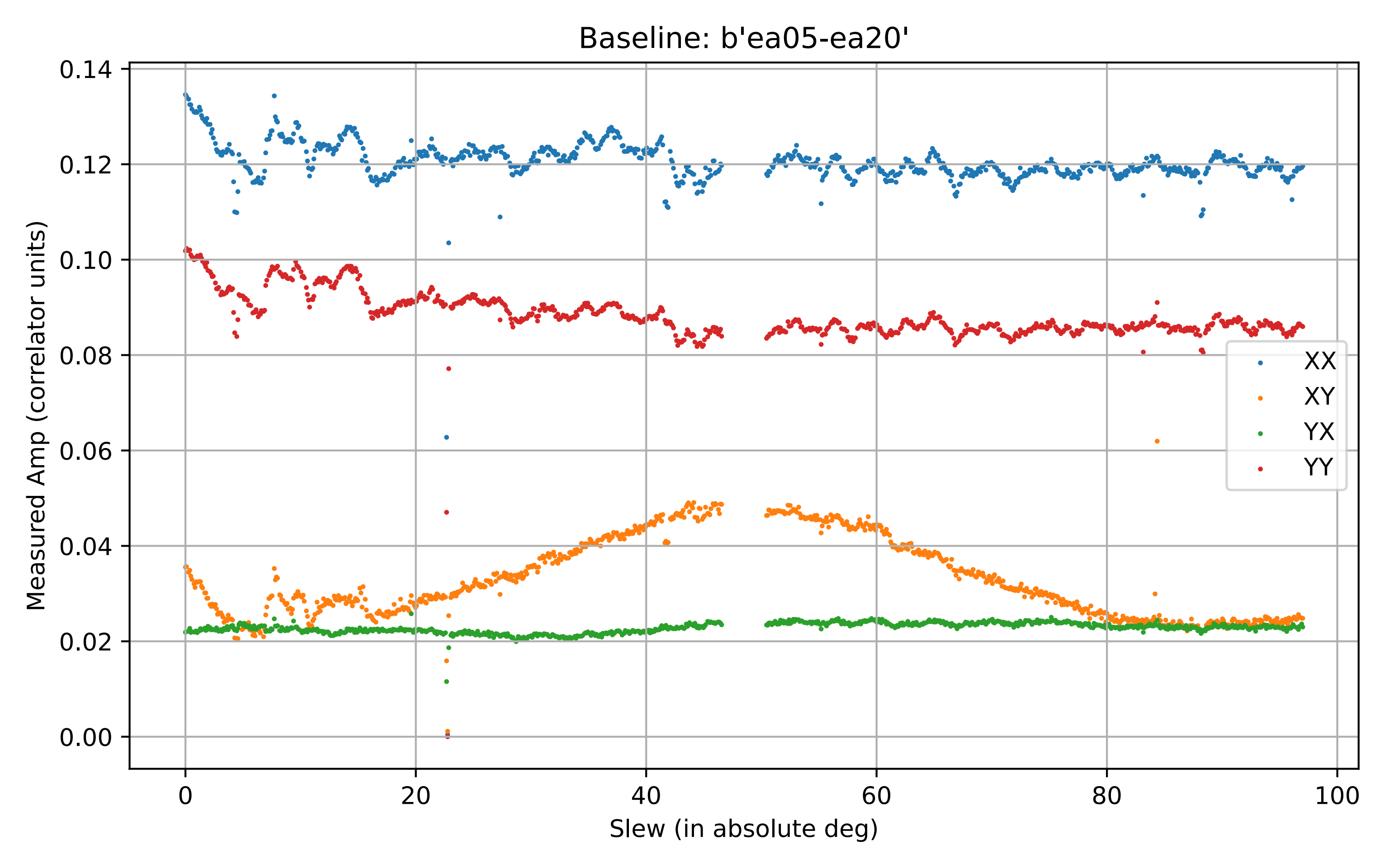

Baseline: b'ea05-ea16'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
Slew (in absolute deg)
0
20
40
60
80
100


Baseline: b'ea05-ea17'
XX
XY
YX
YY
0.04
0.03
0.02
0.01
0.00
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

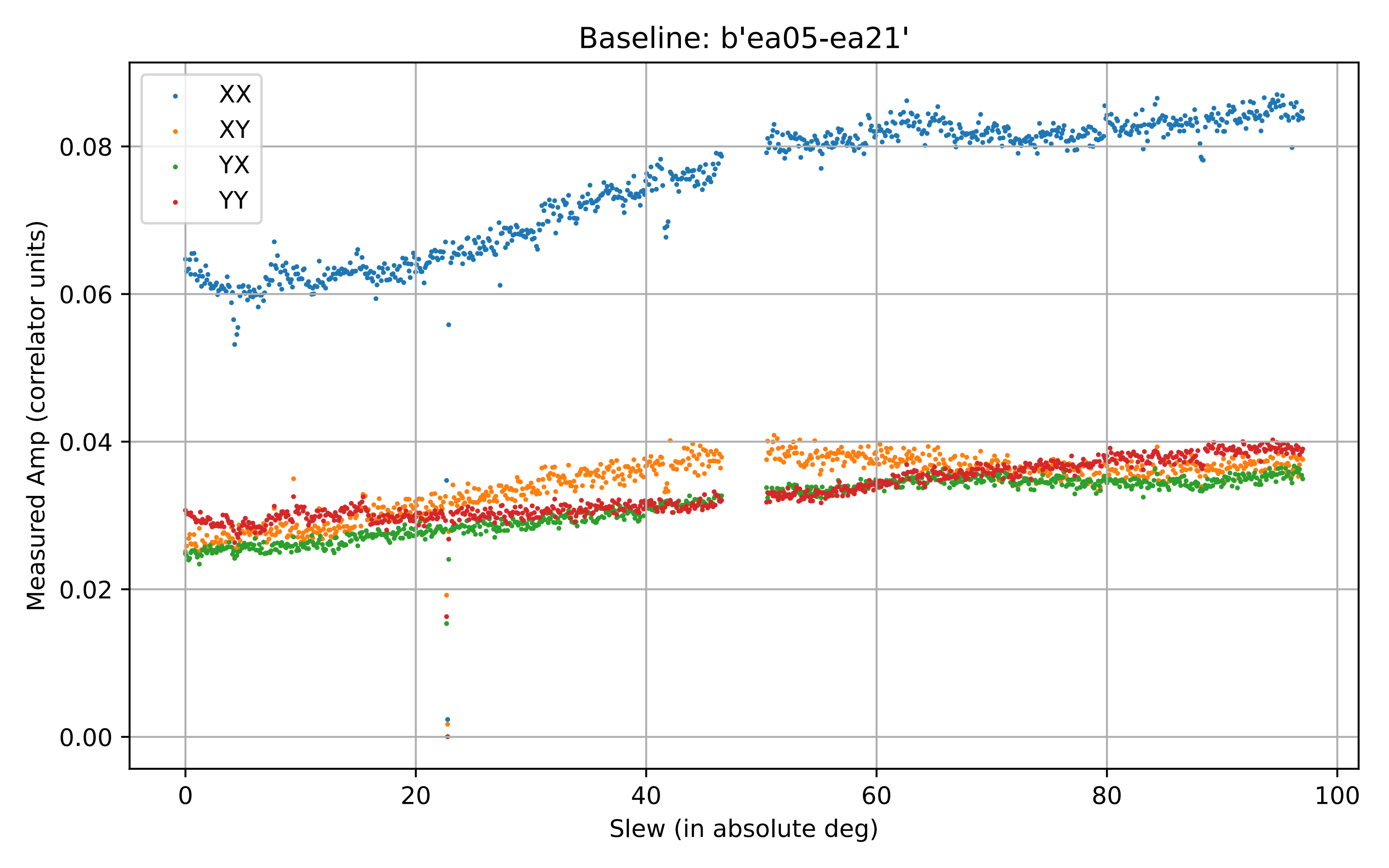

Baseline: b'ea05-ea18'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0
20
40
60
80
100



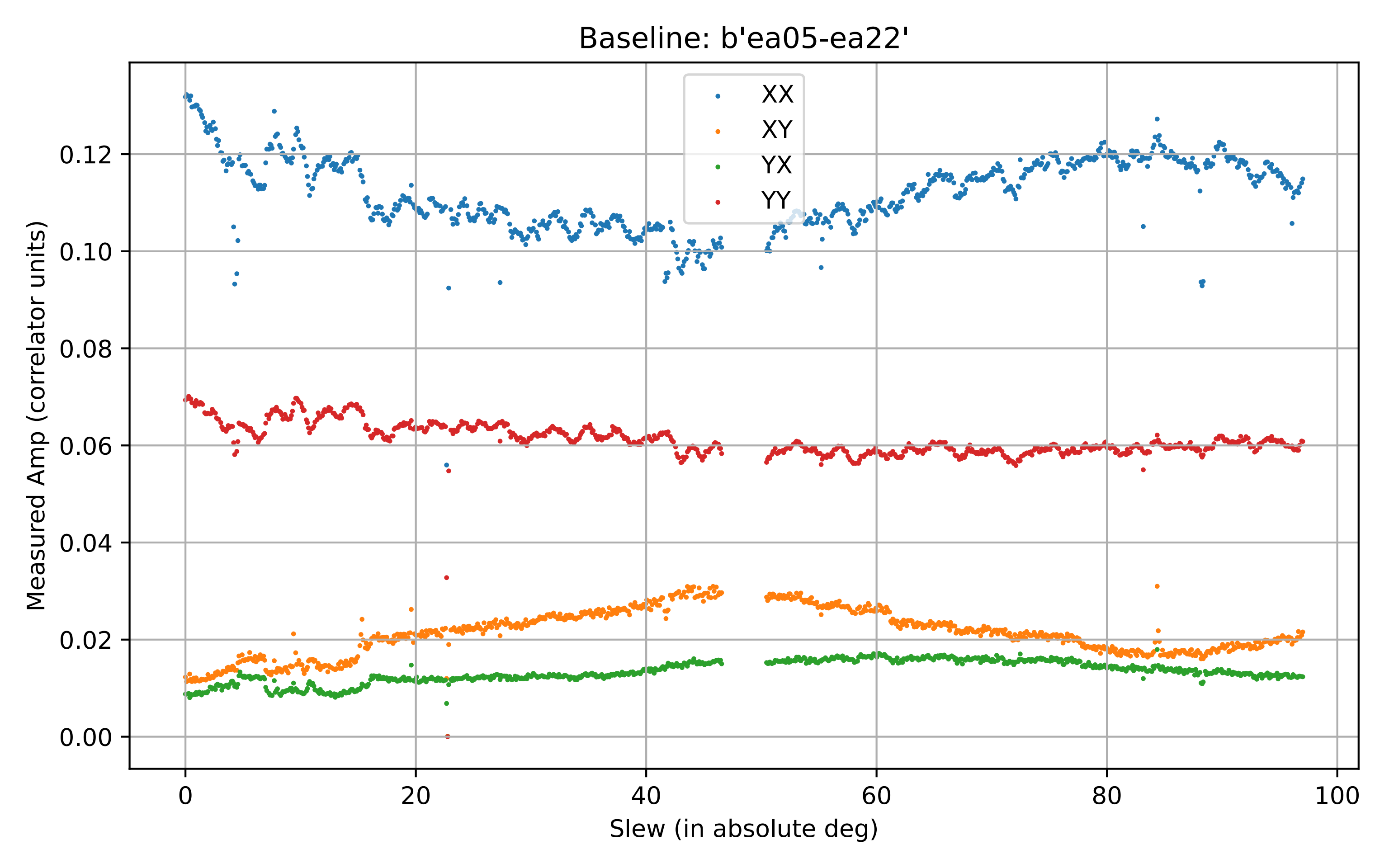
Baseline: b'ea05-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100



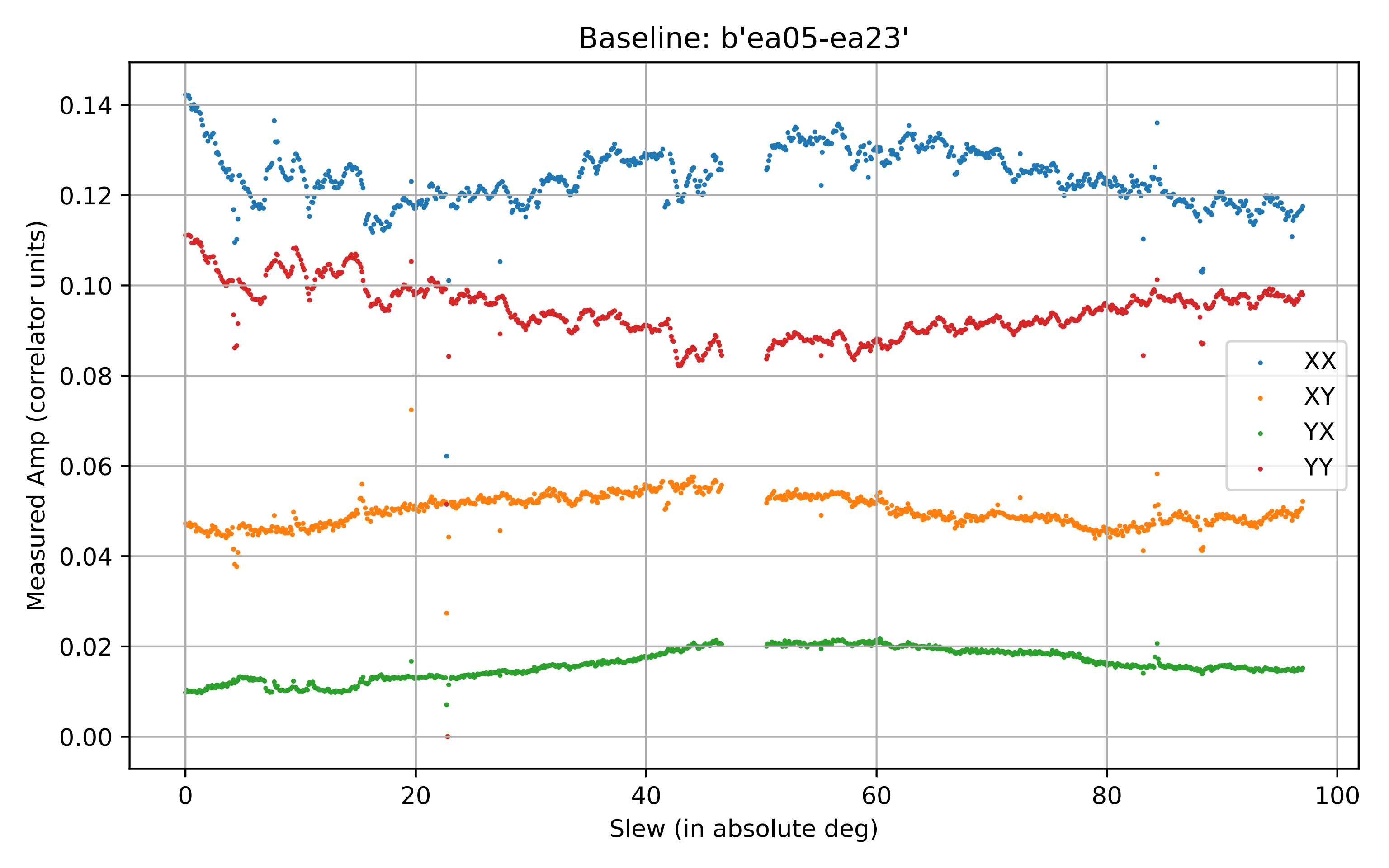
Baseline: b'ea05-ea20'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
XX
XY
YX
YY



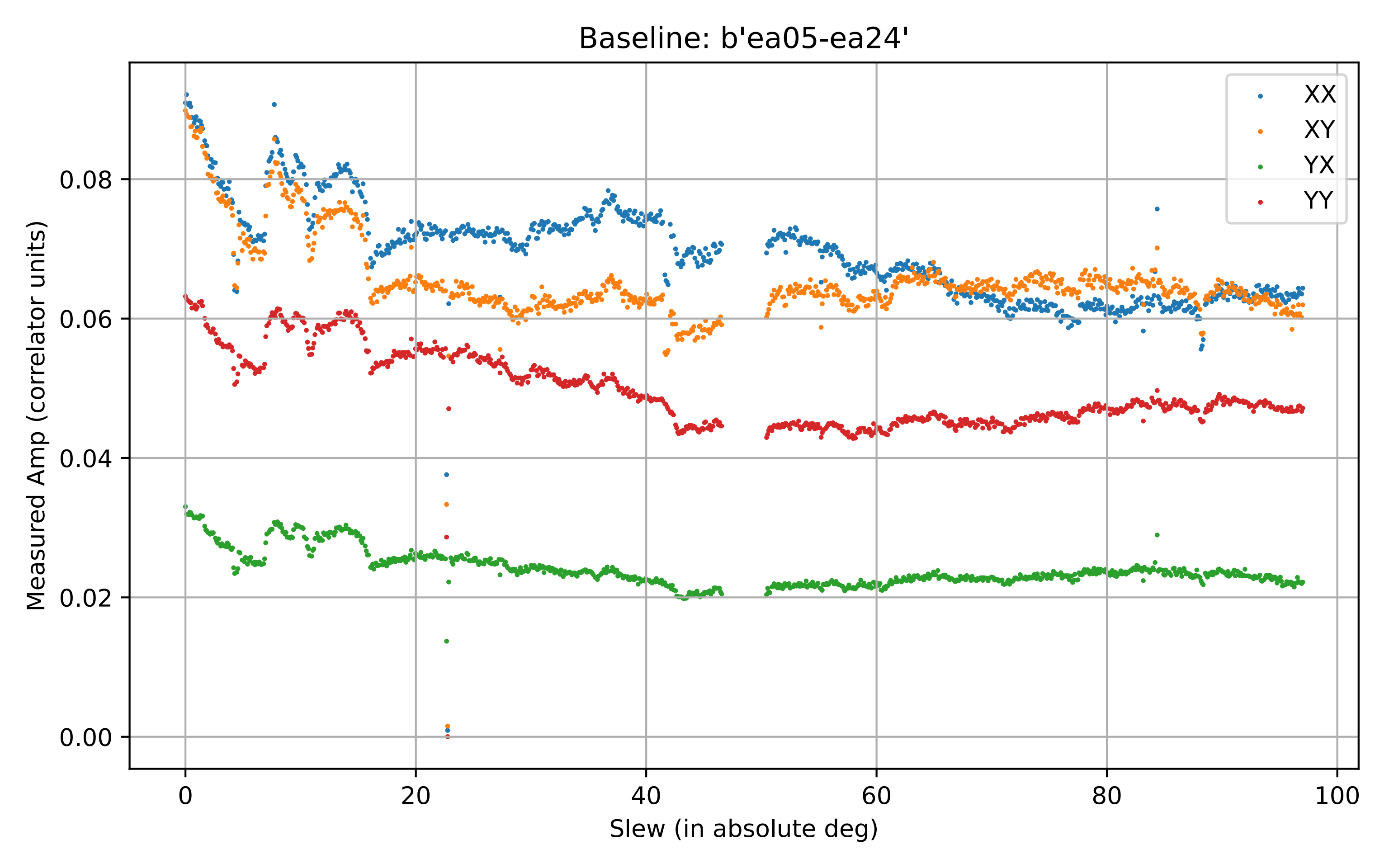
Baseline: b'ea05-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)

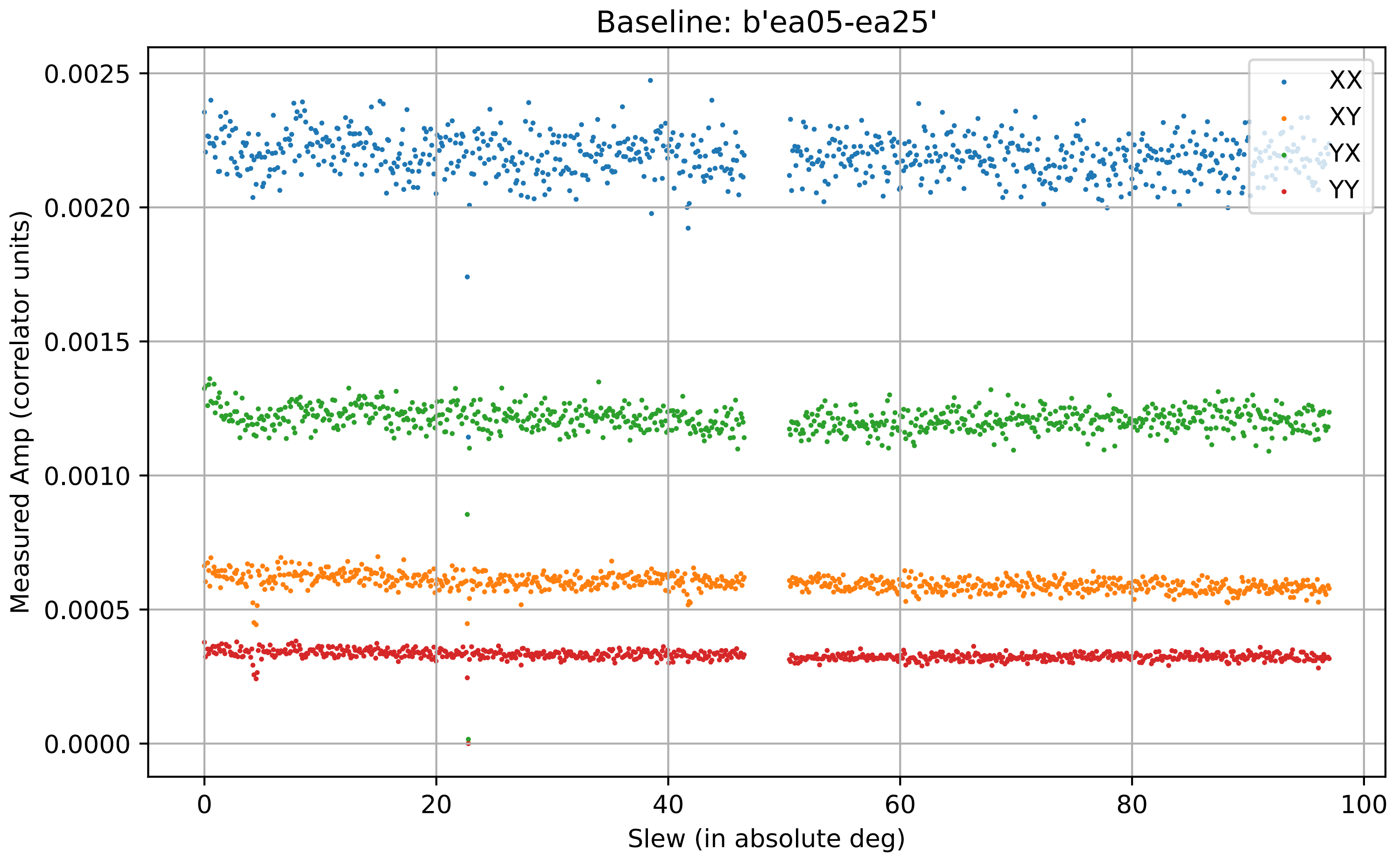


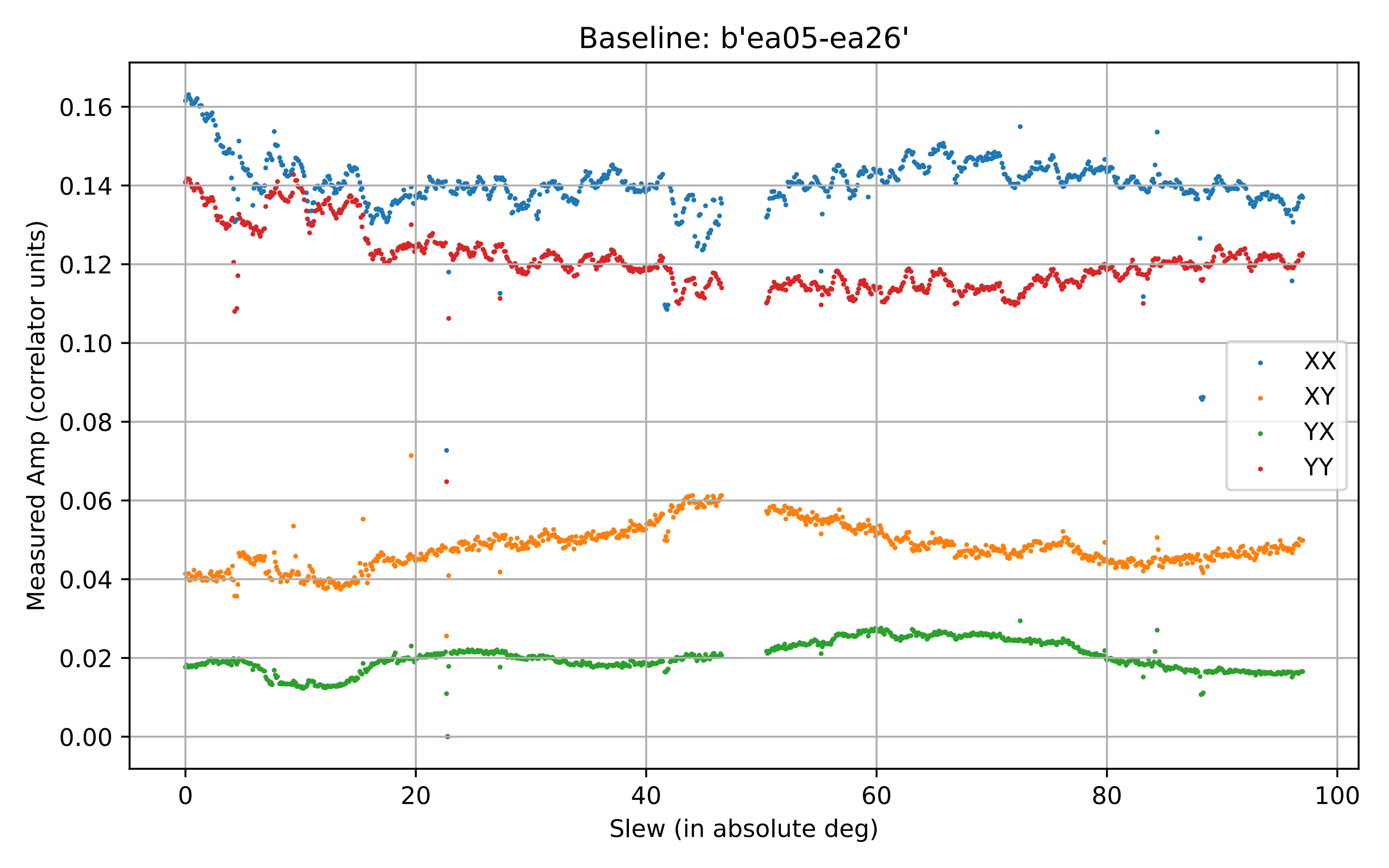
Baseline: b'ea05-ea22'
XX
XY
YX
YY
Measured Amp (correlator units)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100
Slew (in absolute deg)



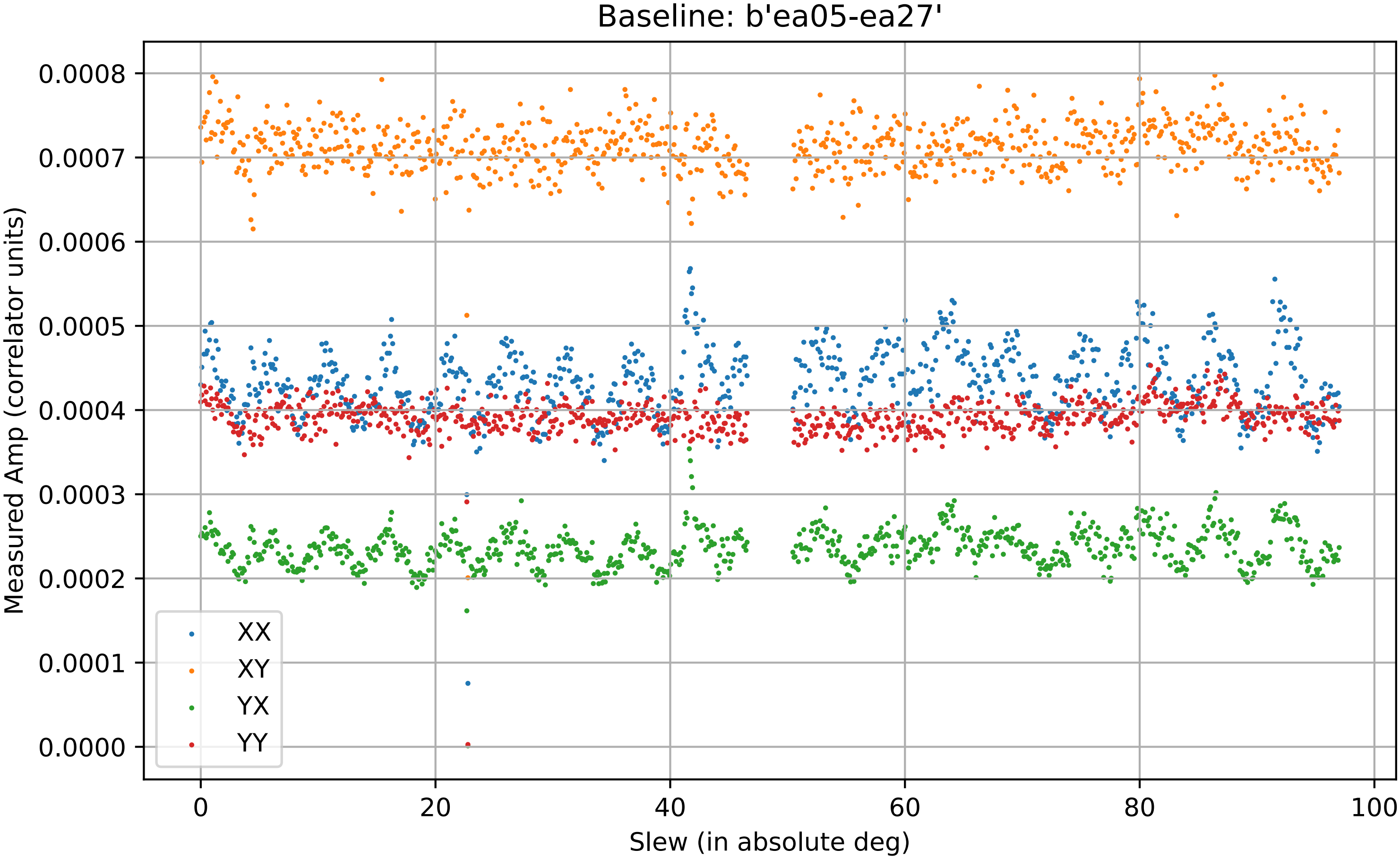
Baseline: b'ea05-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
XX
XY
YX
YY

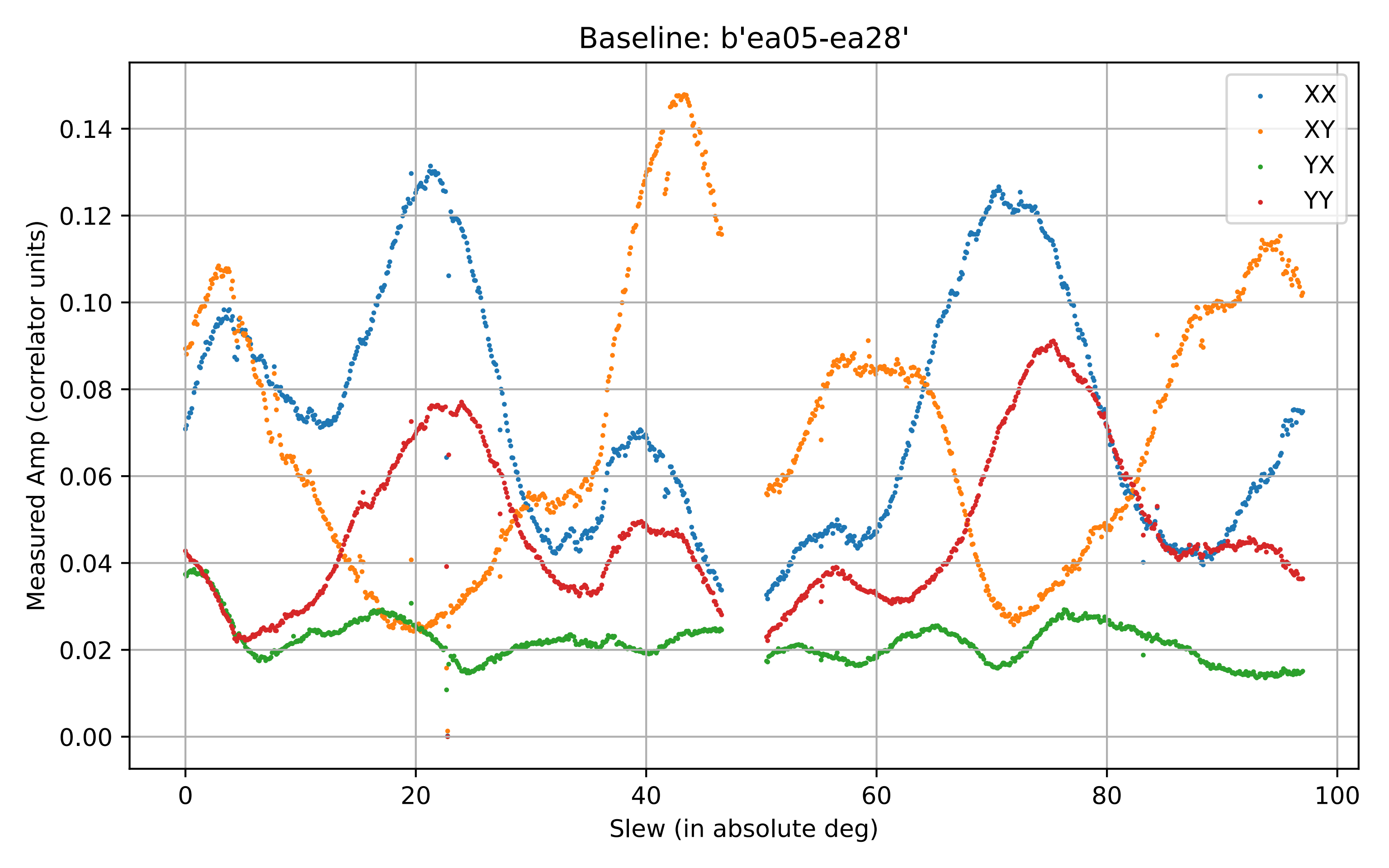

Baseline: b'ea05-ea24'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea05-ea25'
XX
XY
YX
YY
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

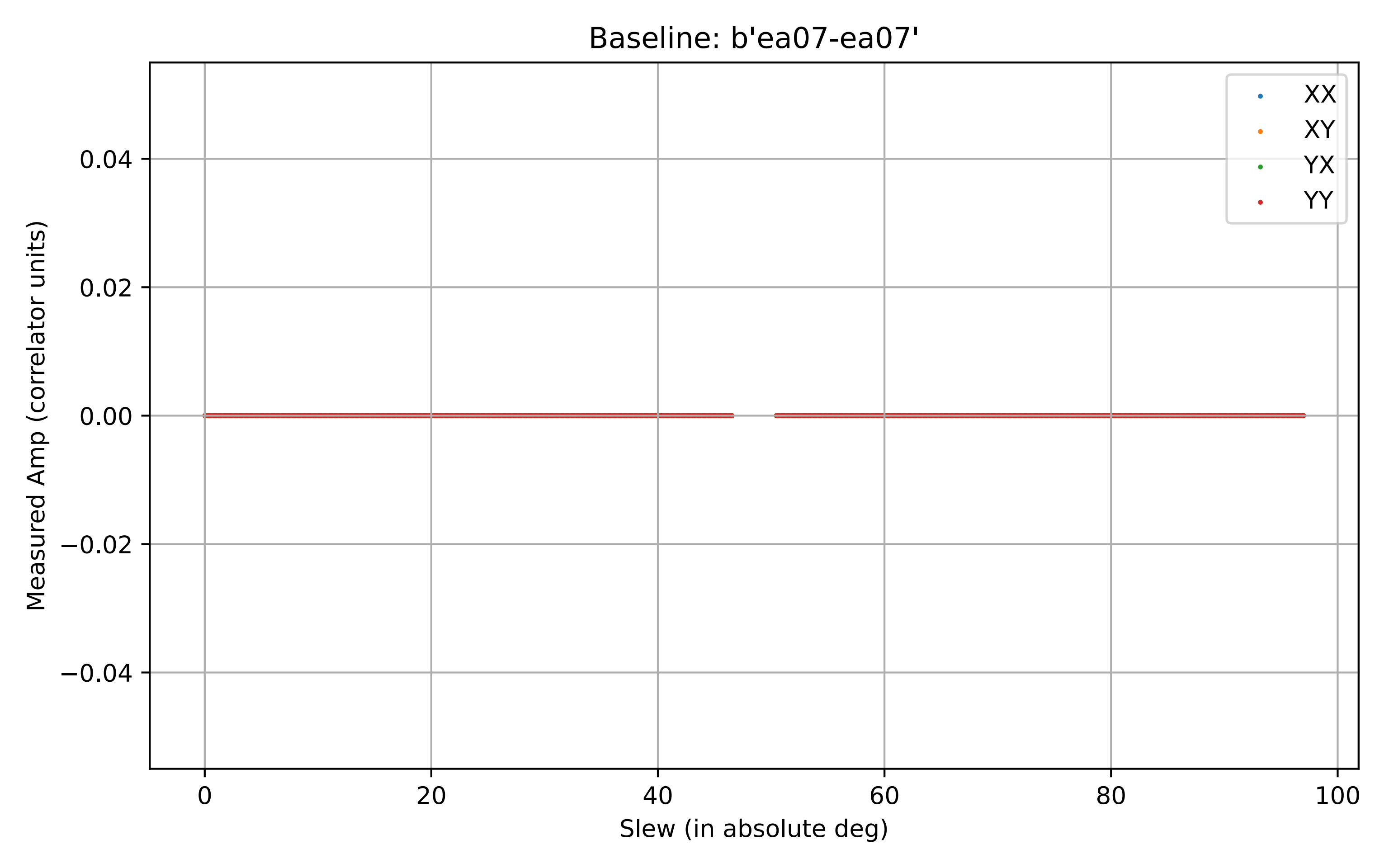


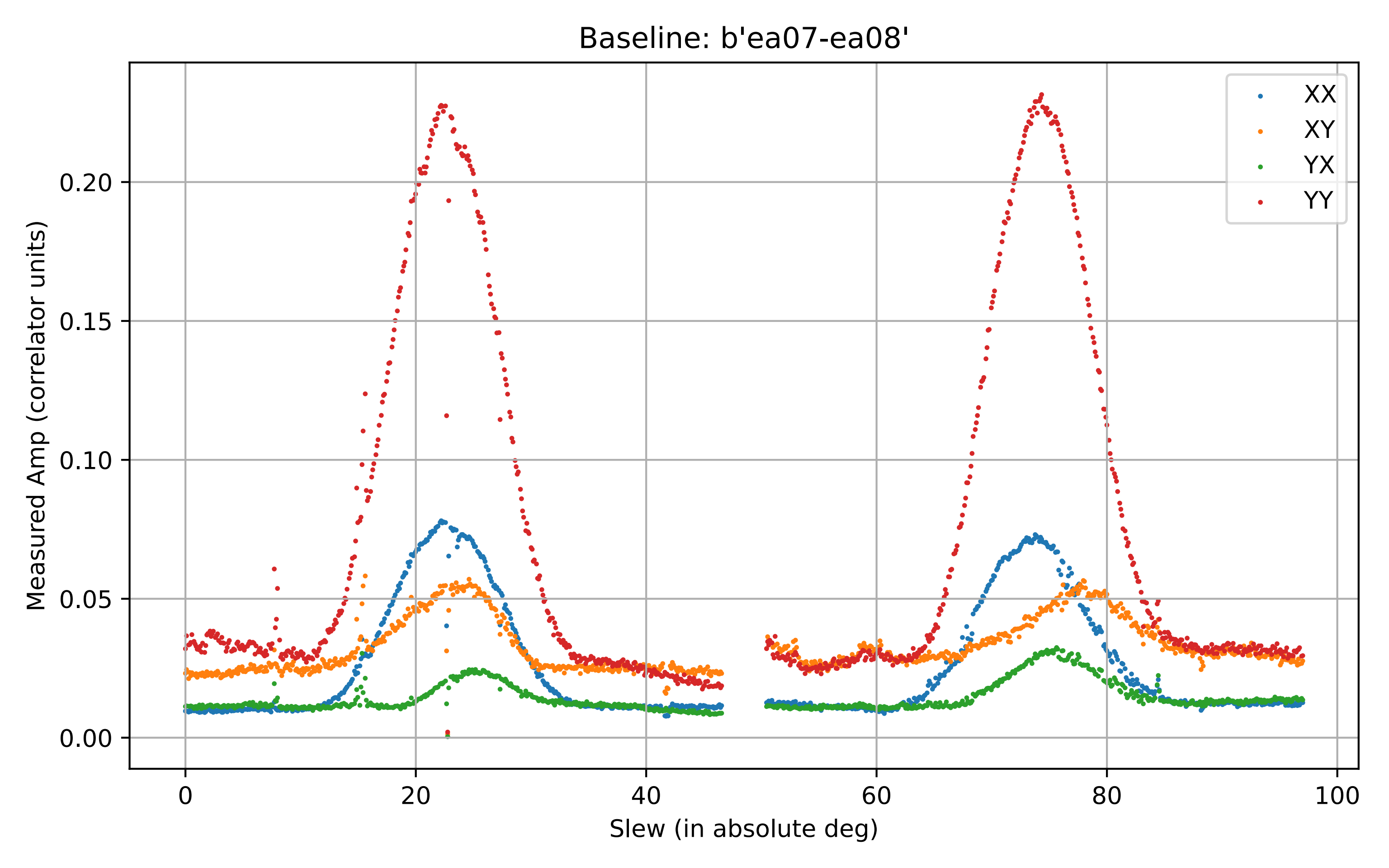
Baseline: b'ea05-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100
XX
XY
YX
YY


Baseline: b'ea05-ea27'
Measured Amp (correlator units)
Slew (in absolute deg)
0.0000
0.0001
0.0002
0.0003
0.0004
0.0005
0.0006
0.0007
0.0008
0
20
40
60
80
100
XX
XY
YX
YY

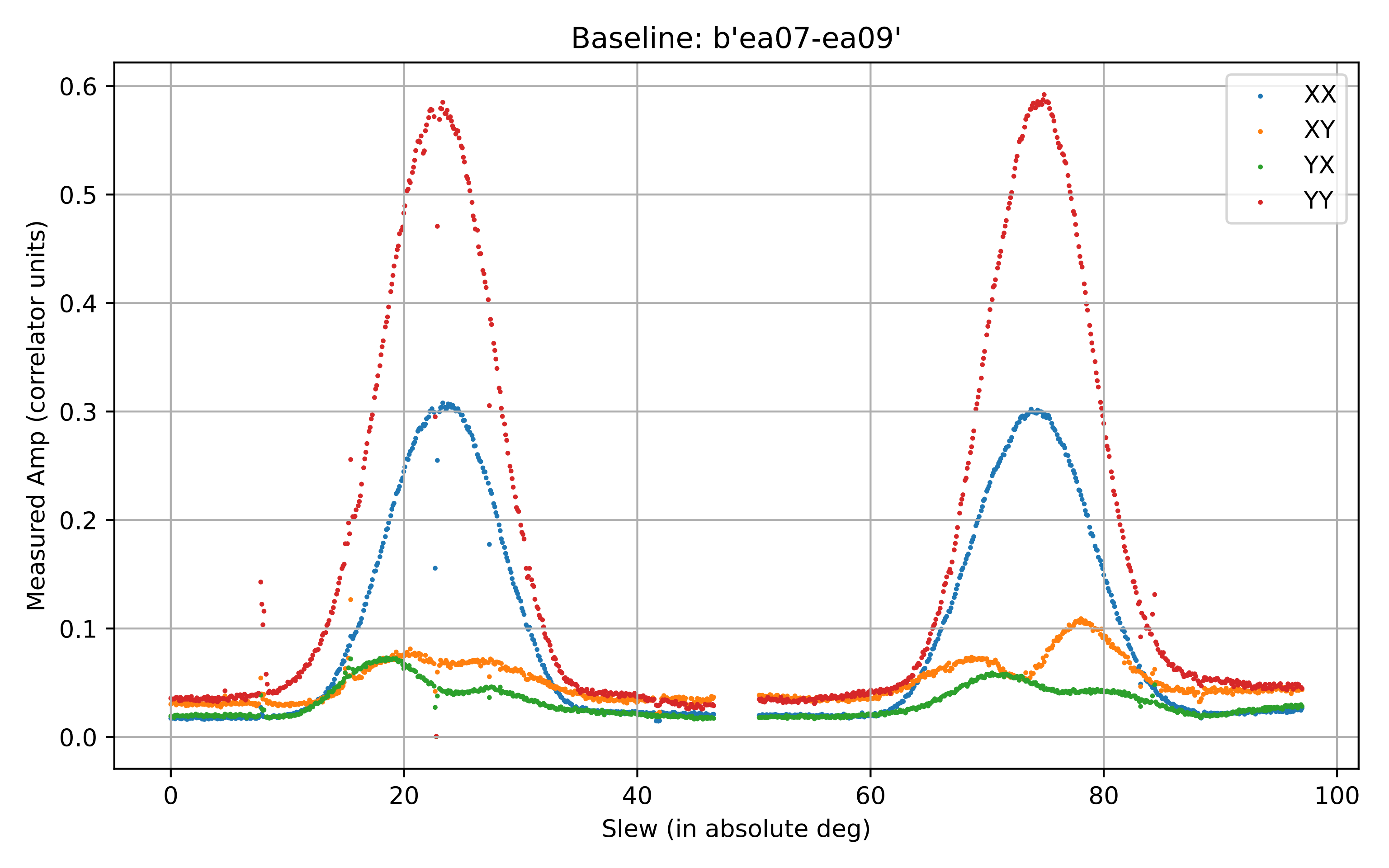


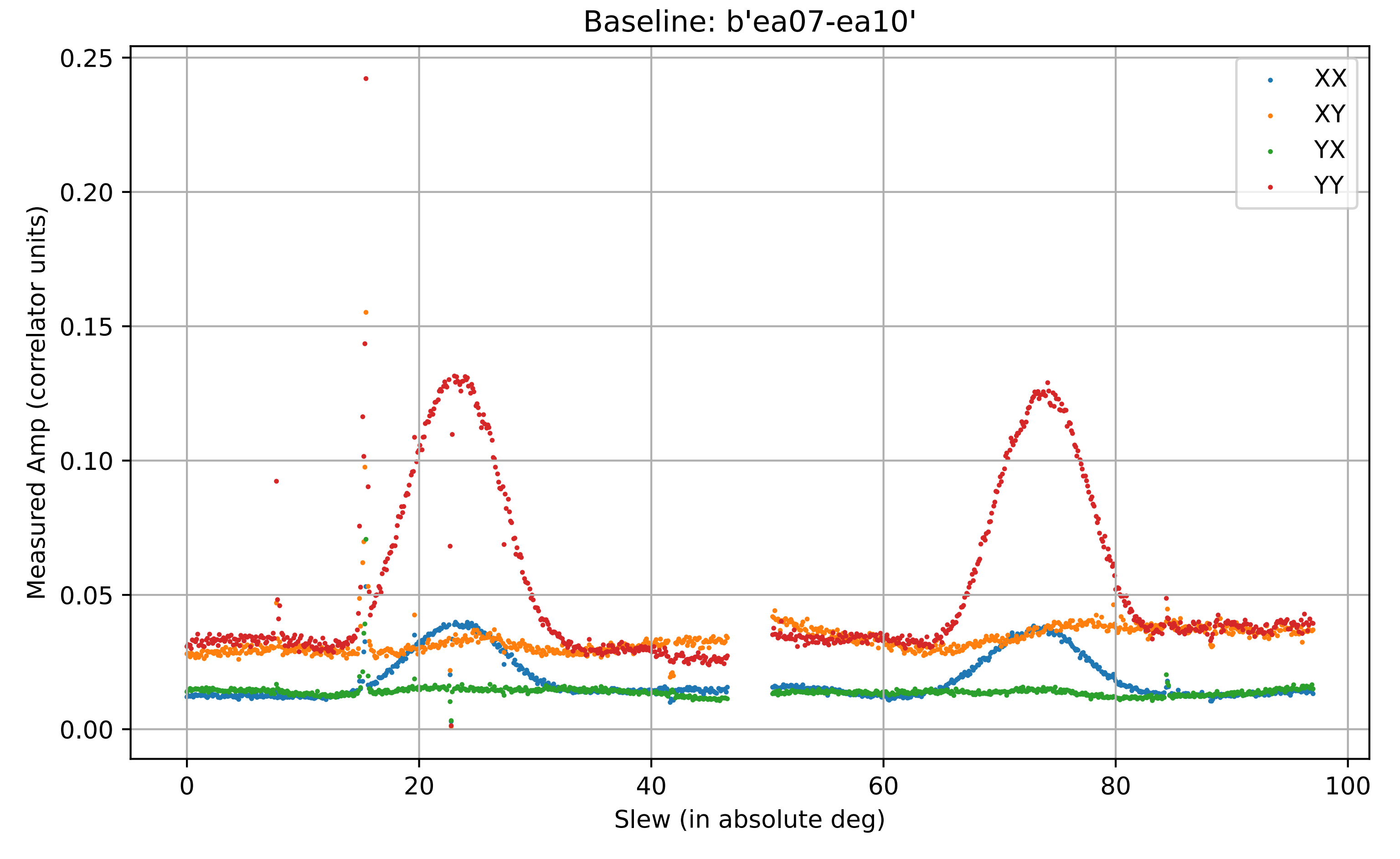
Baseline: b'ea05-ea28'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea07-ea07'
Measured Amp (correlator units)
0.04
0.02
0.00
−0.02
−0.04
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

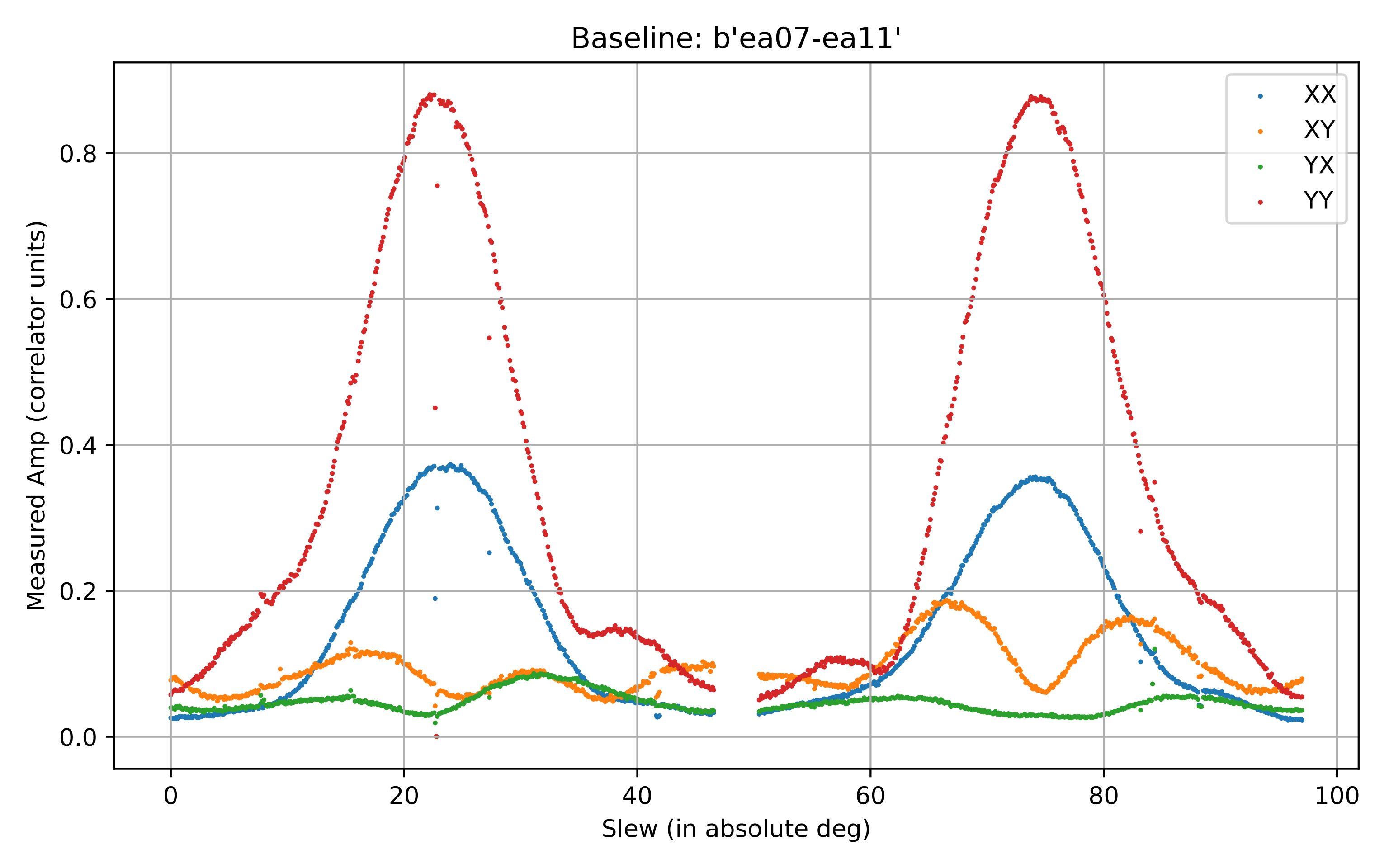


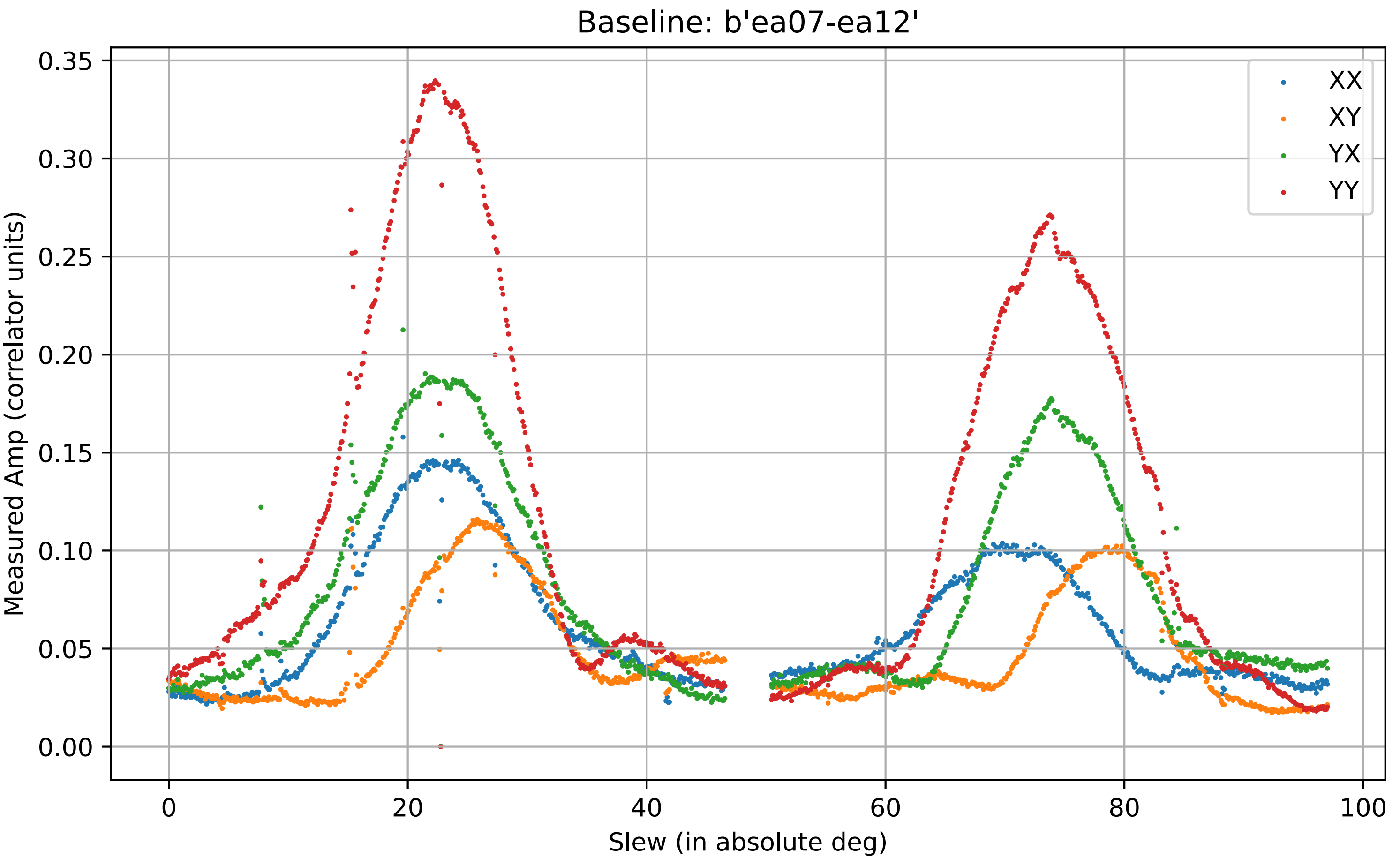
Baseline: b'ea07-ea08'
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

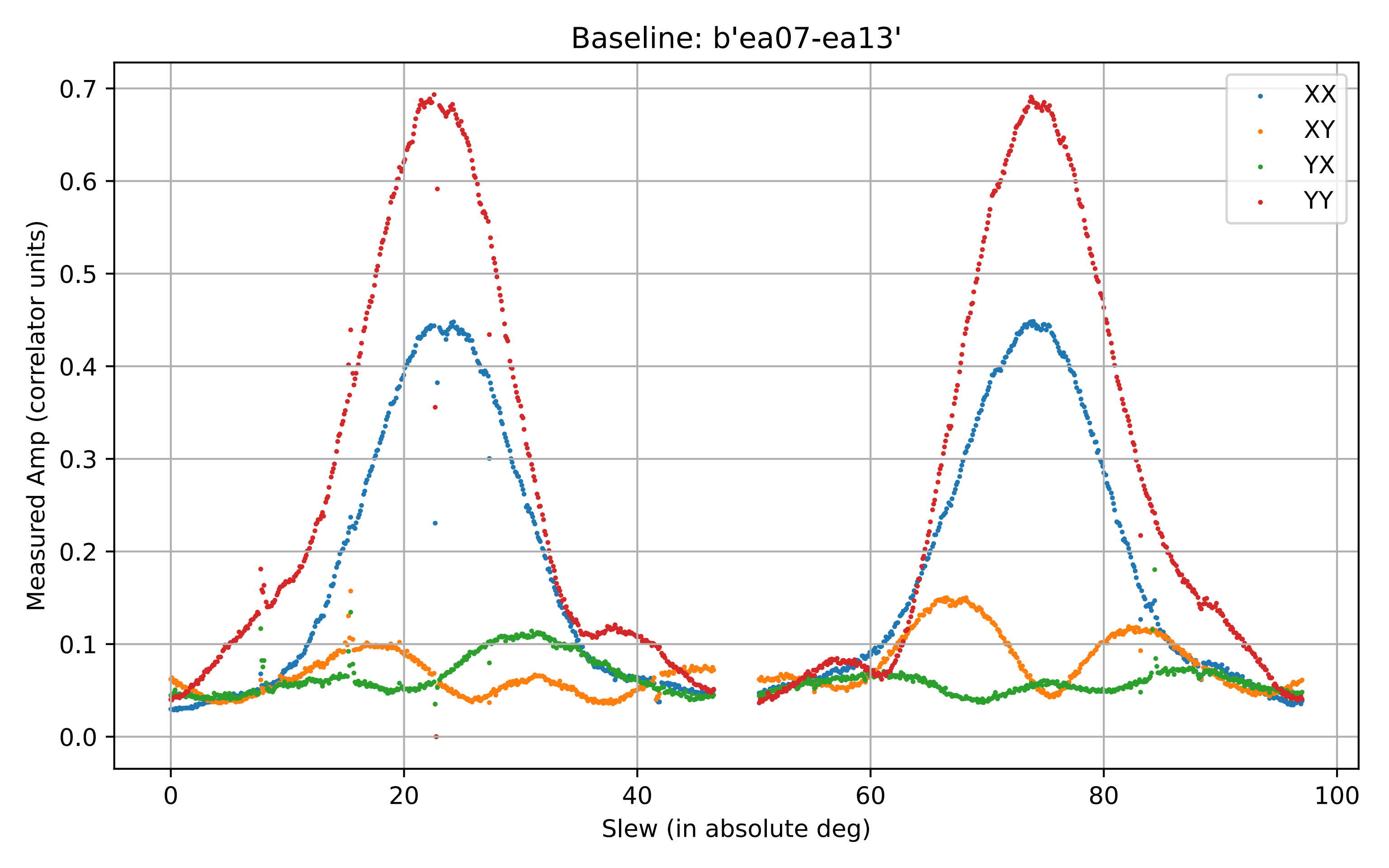

Baseline: b'ea07-ea09'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
20
40
60
80
100
Slew (in absolute deg)

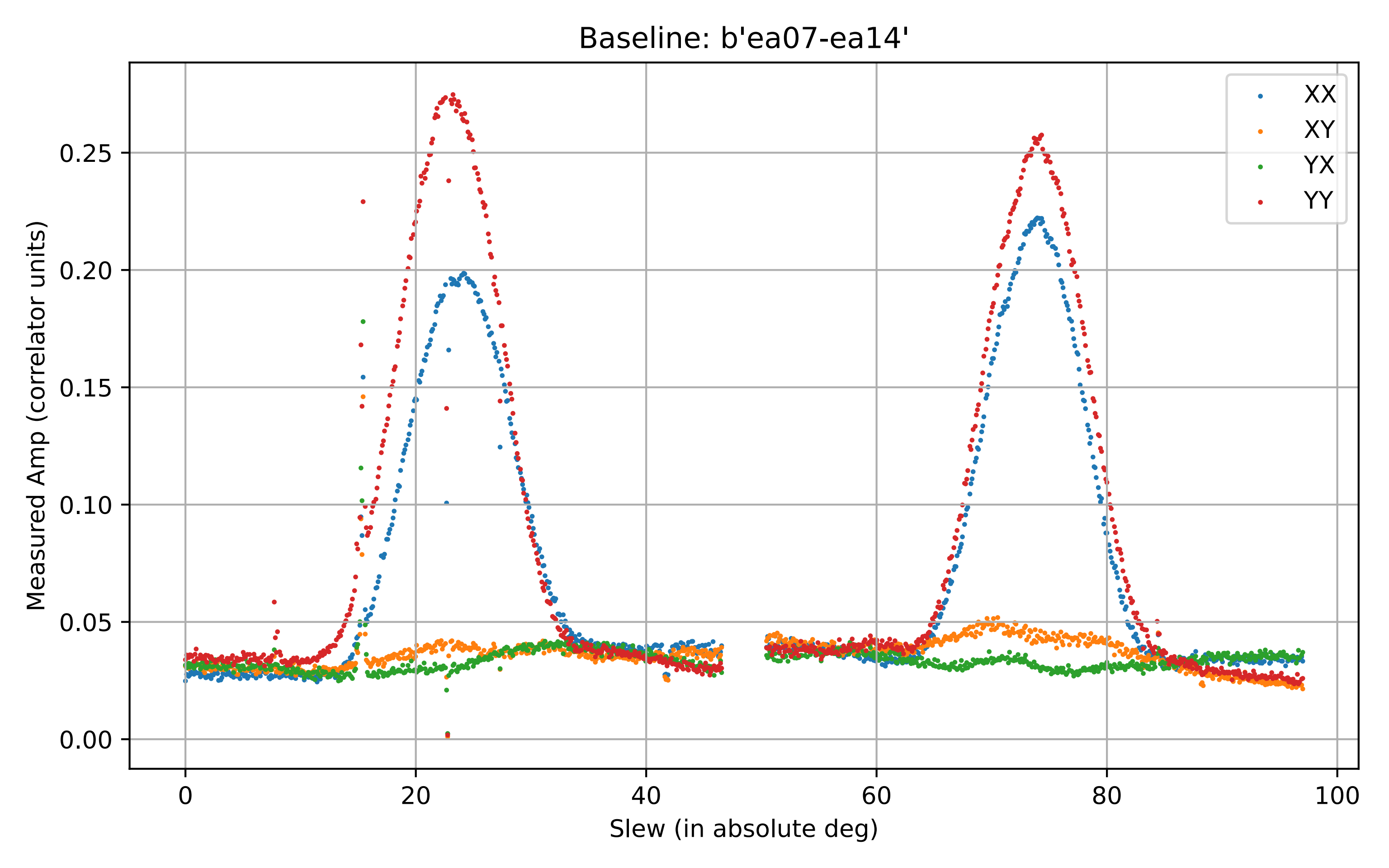


Baseline: b'ea07-ea10'
Measured Amp (correlator units)
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

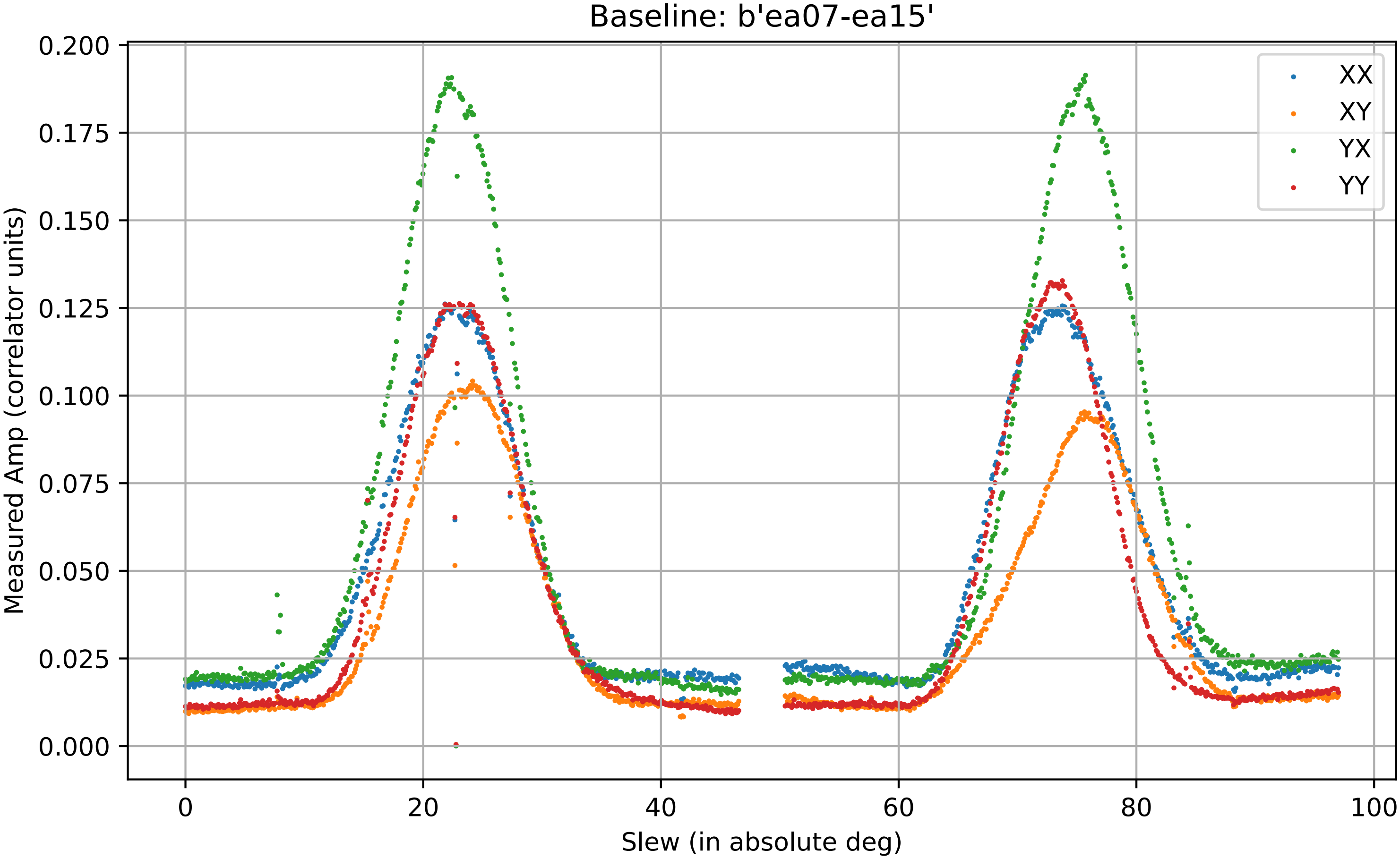

Baseline: b'ea07-ea11'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.2
0.4
0.6
0.8
0
20
40
60
80
100
Slew (in absolute deg)

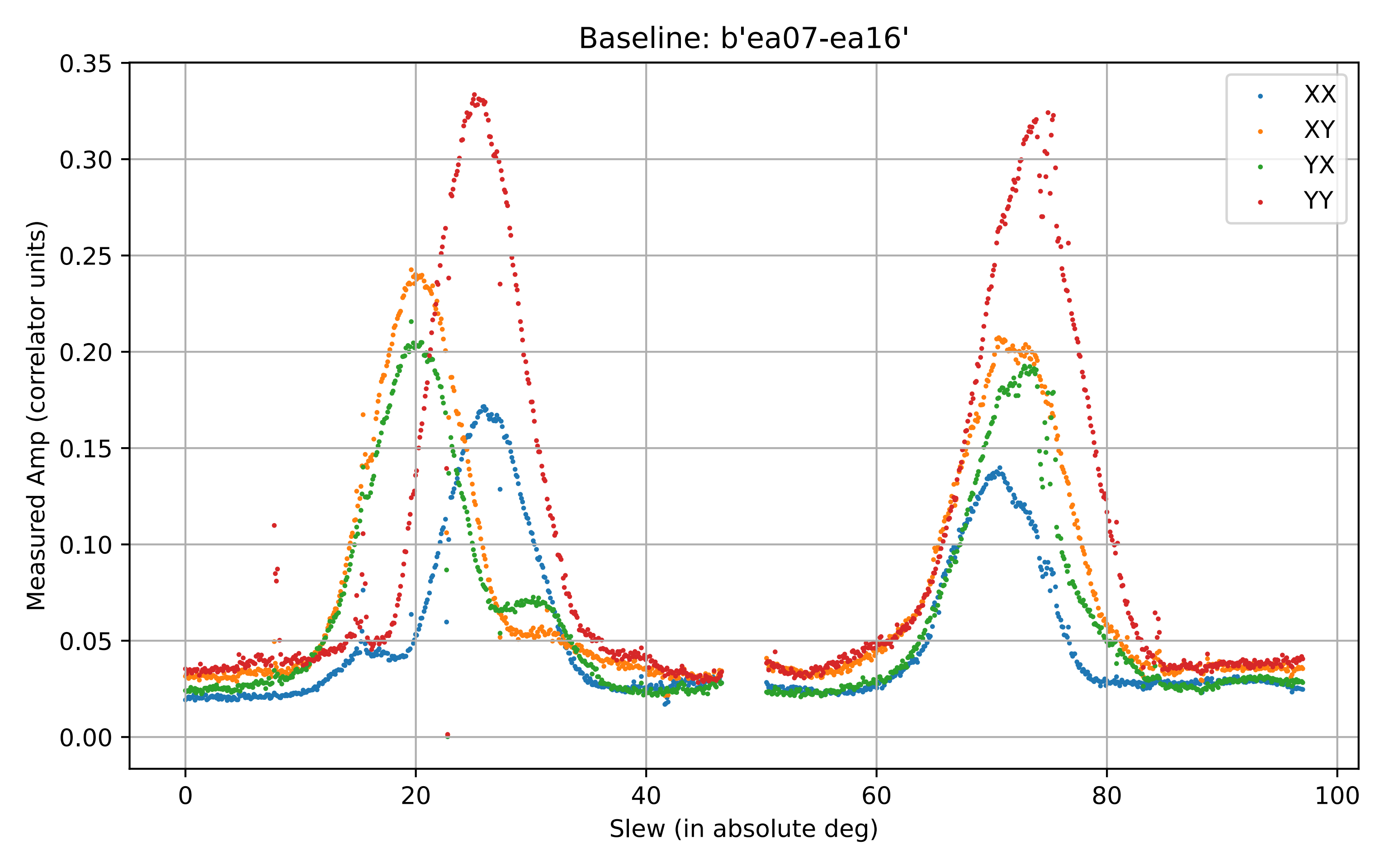

Baseline: b'ea07-ea12'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100


Baseline: b'ea07-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
20
40
60
80
100
XX
XY
YX
YY

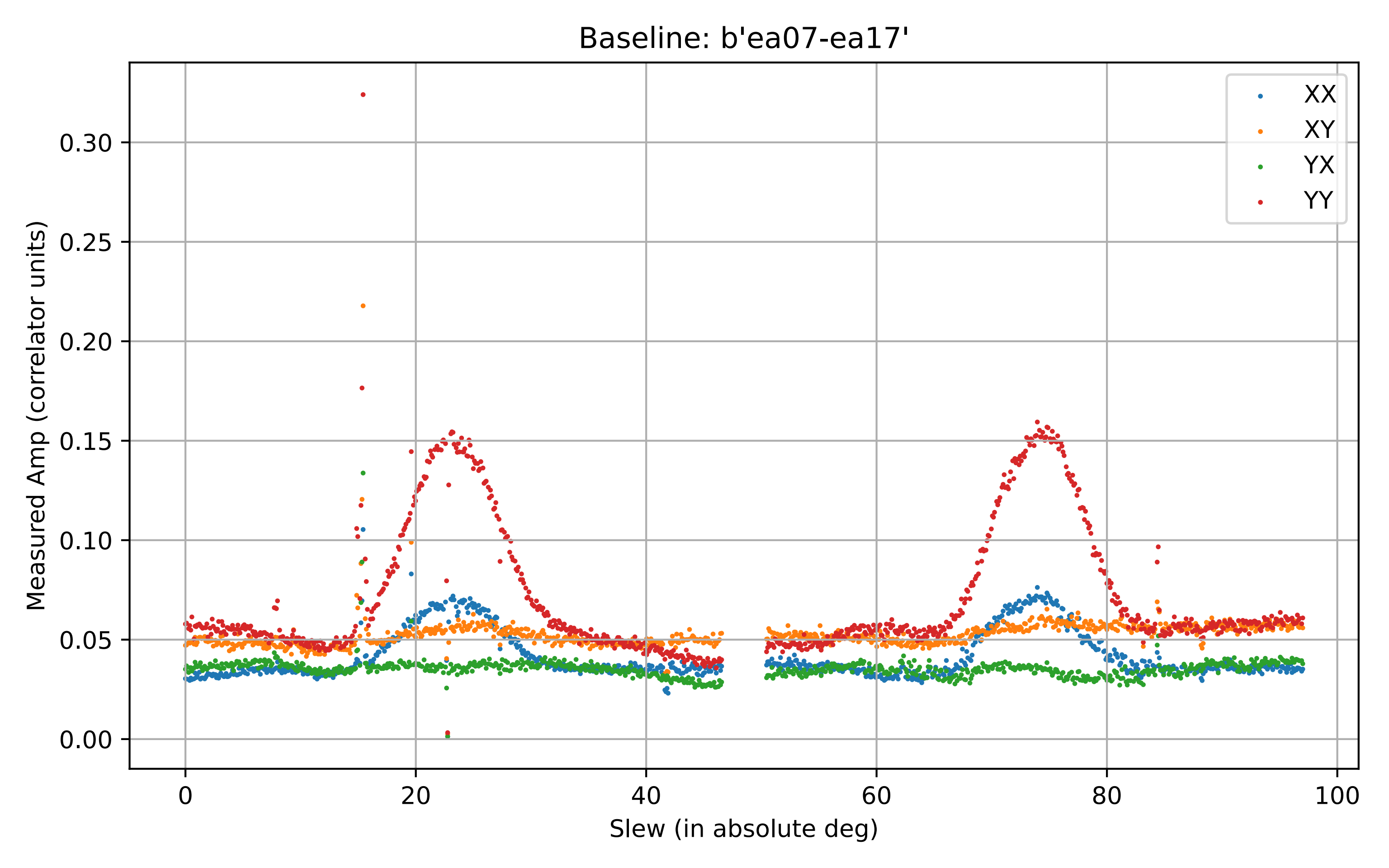


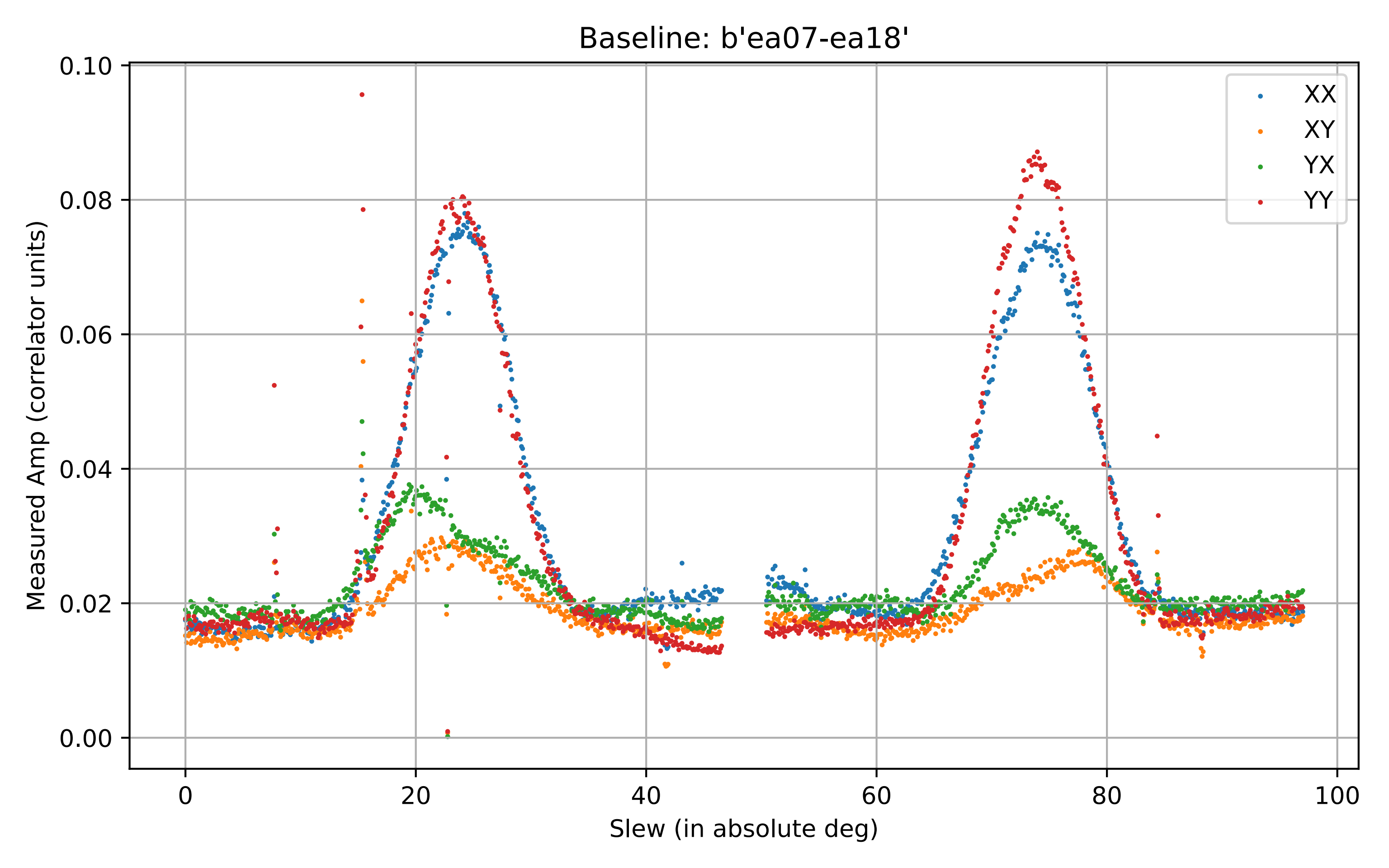
Baseline: b'ea07-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea07-ea15'
Measured Amp (correlator units)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

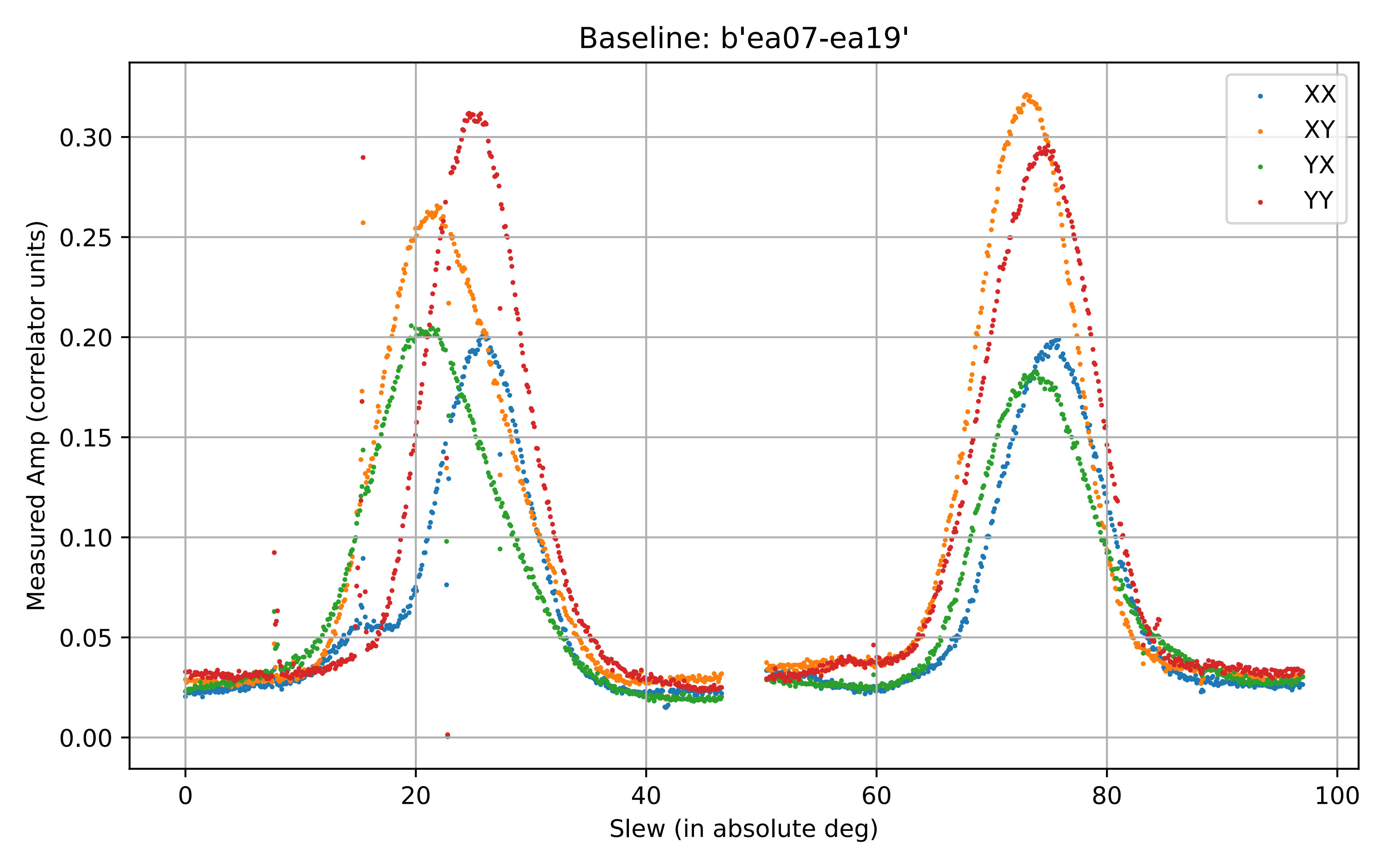


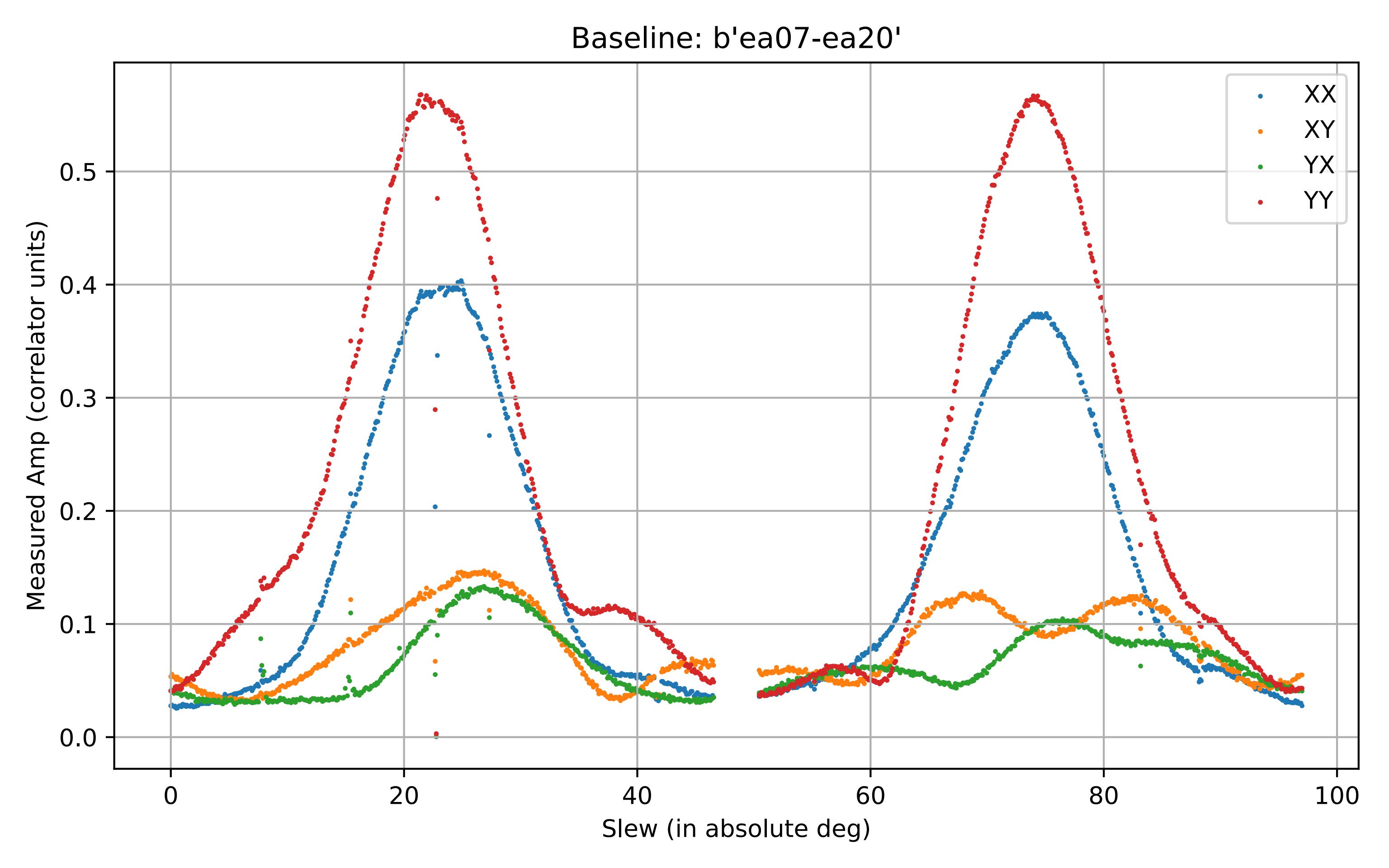
Baseline: b'ea07-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100

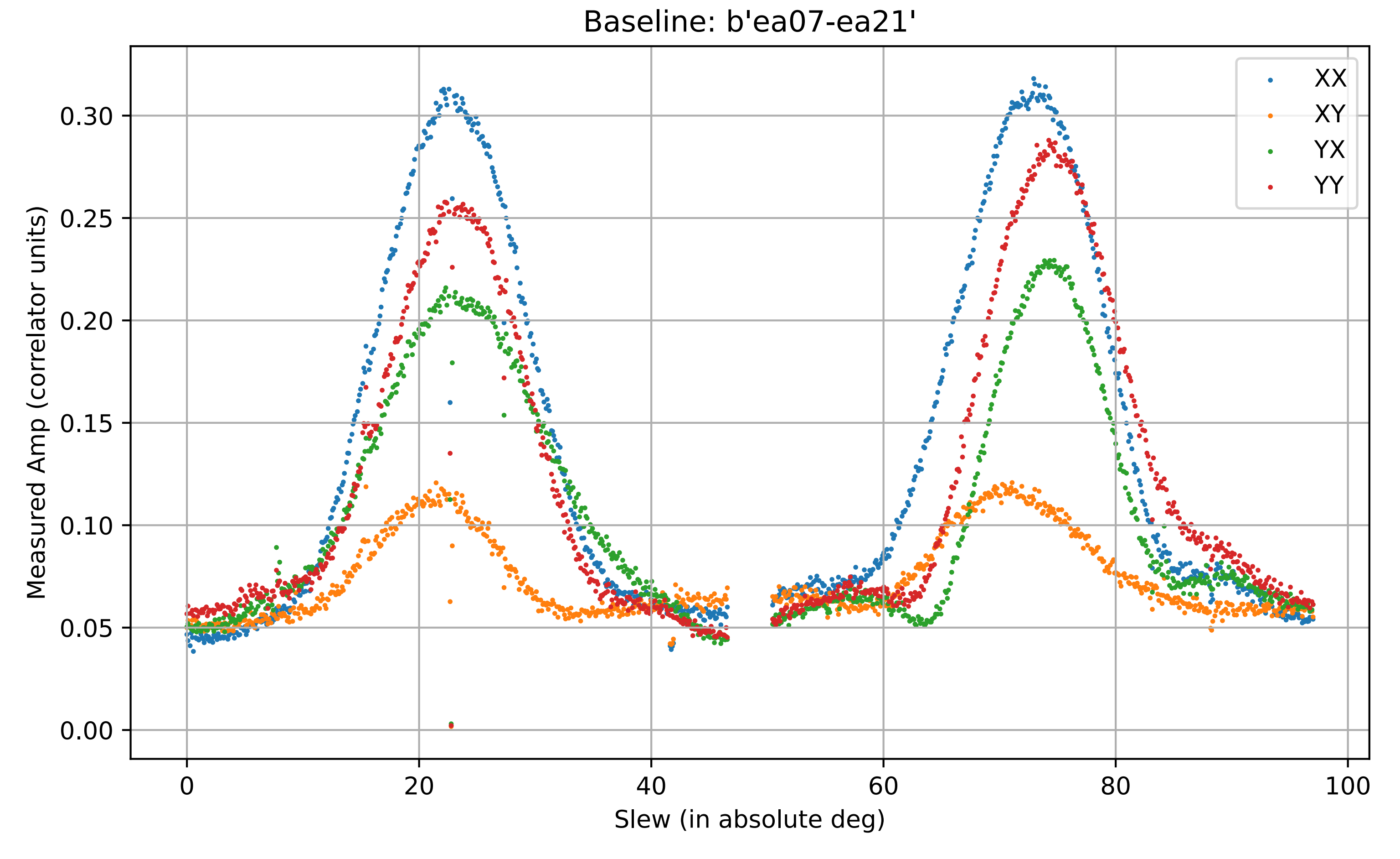

Baseline: b'ea07-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100

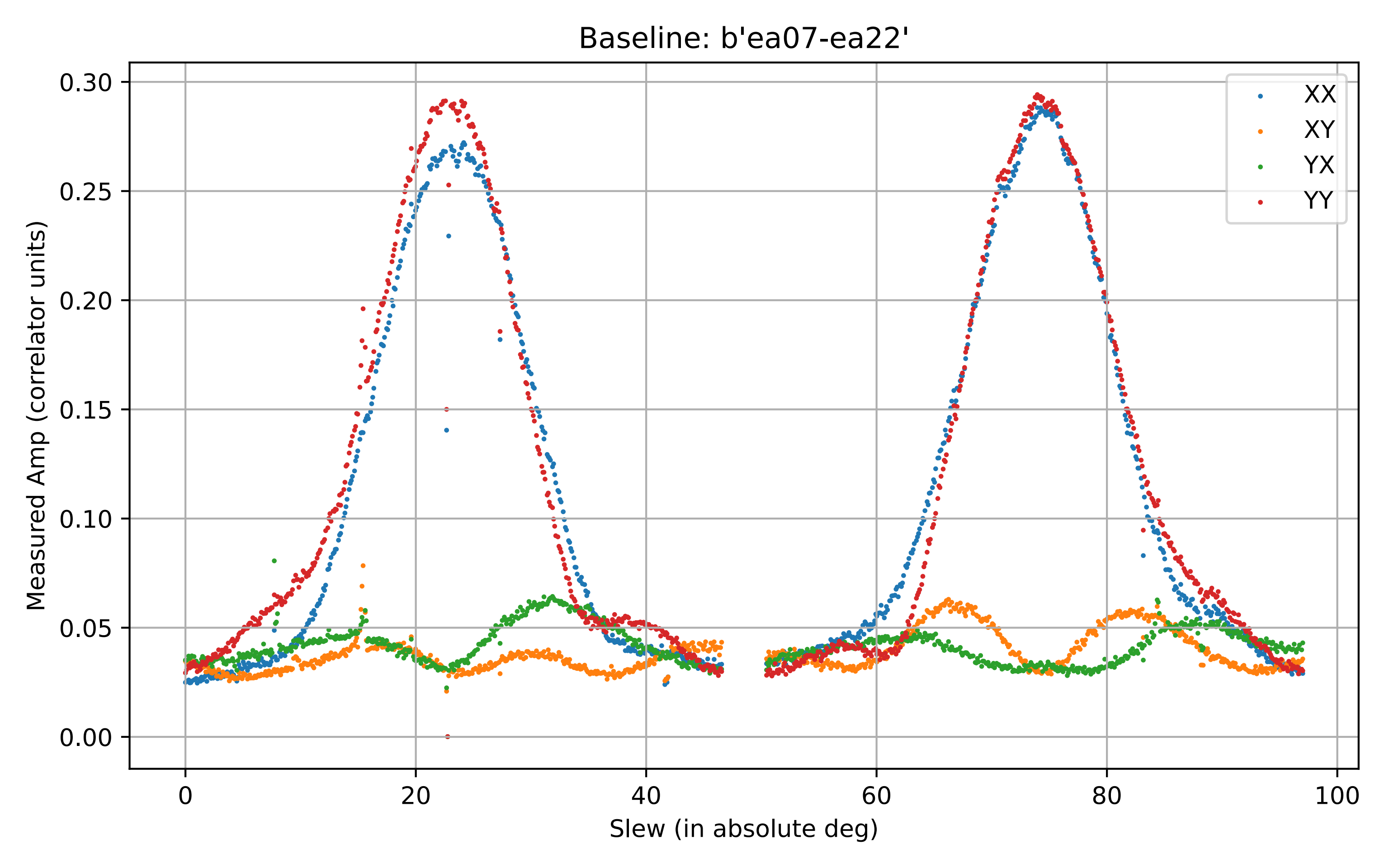


Baseline: b'ea07-ea18'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100

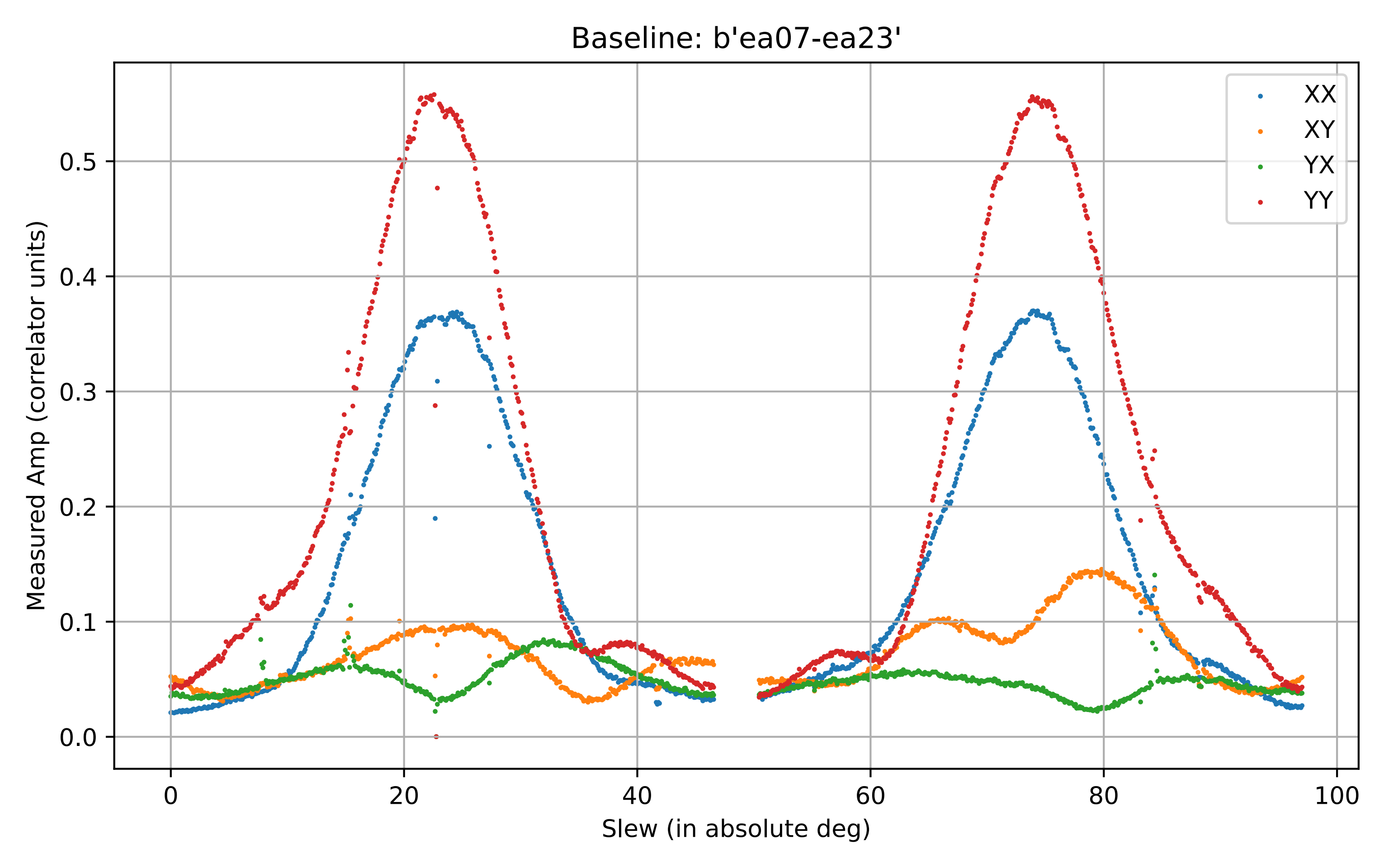

Baseline: b'ea07-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100

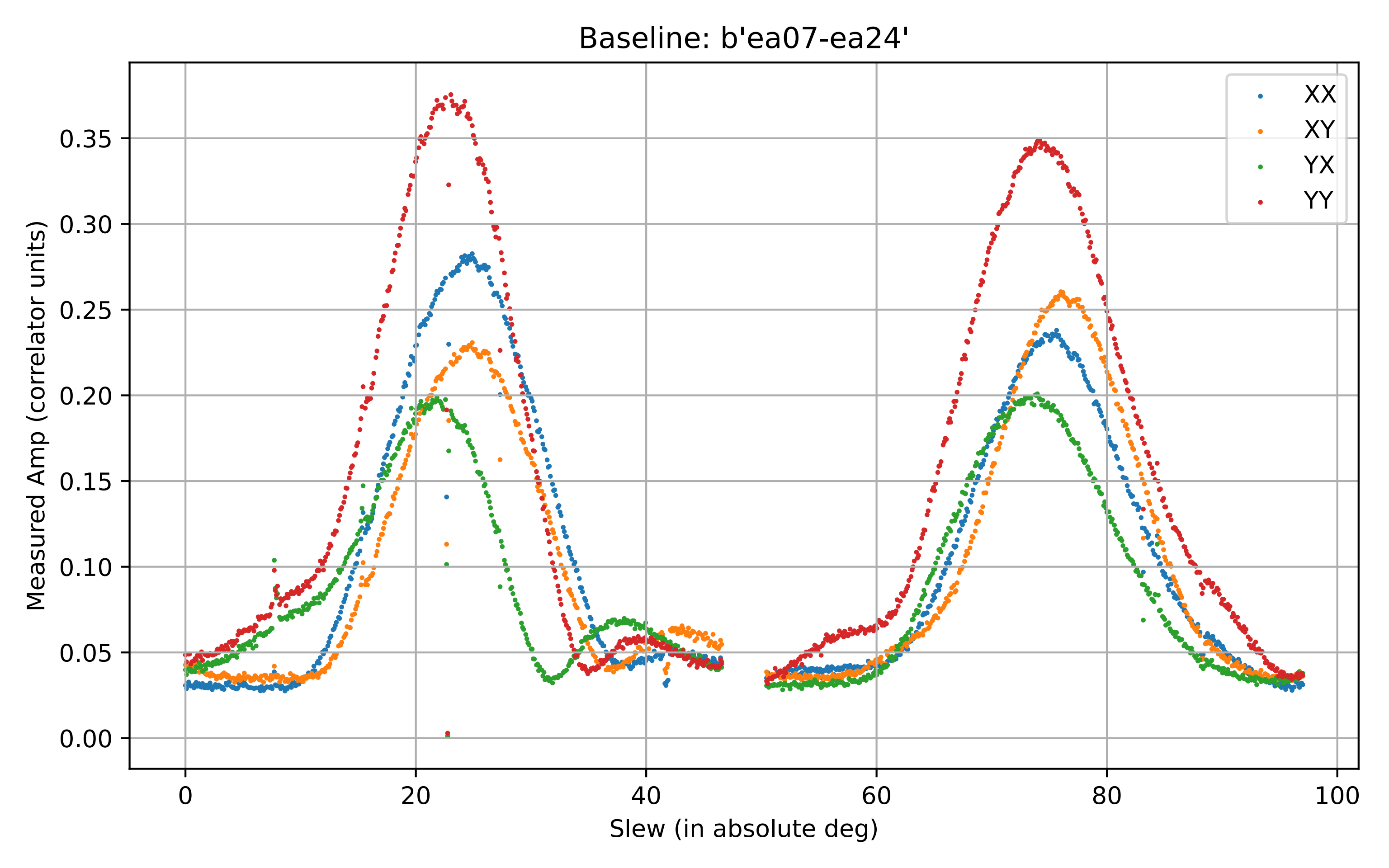

Baseline: b'ea07-ea20'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0.5
Slew (in absolute deg)
0
20
40
60
80
100

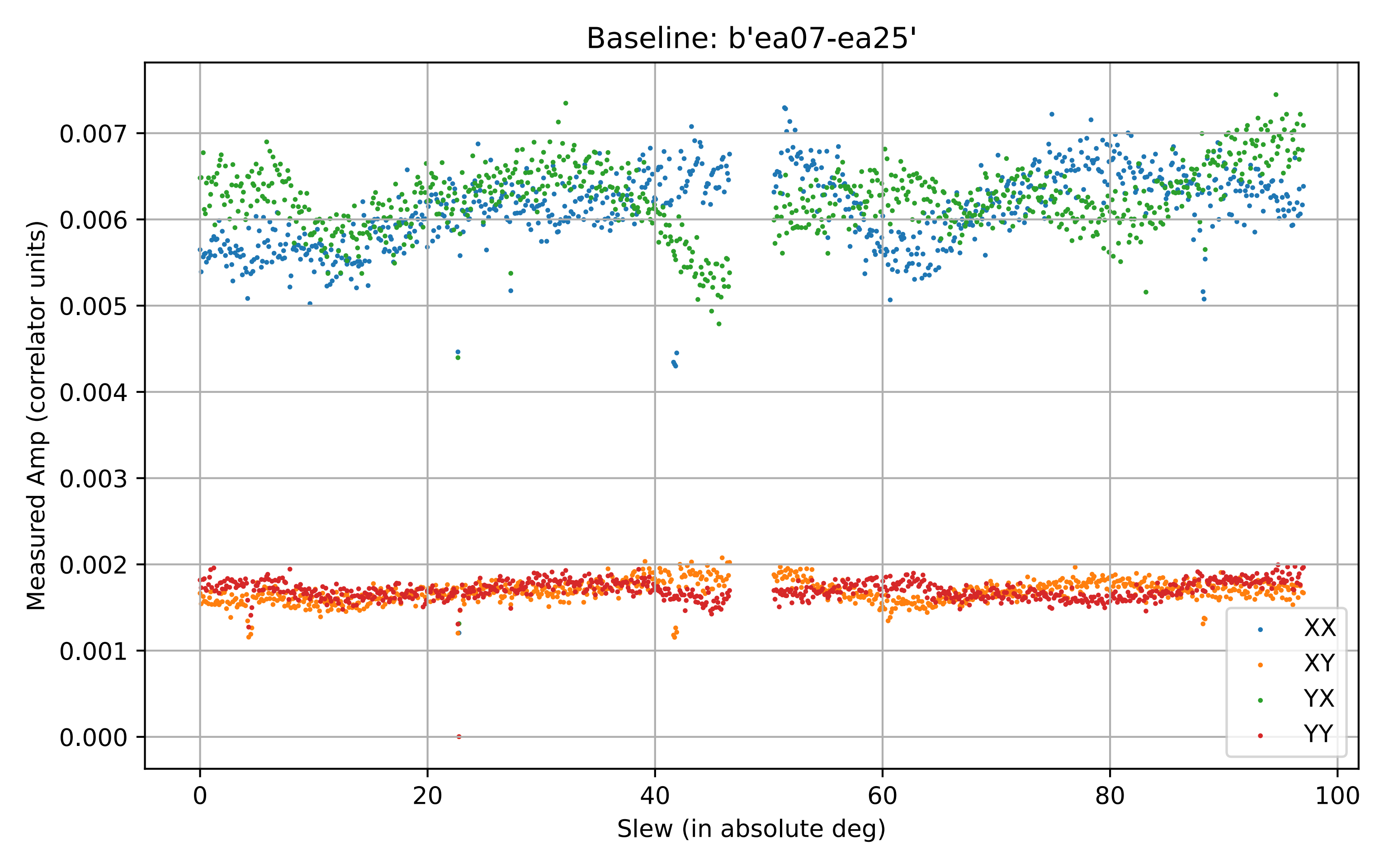

Baseline: b'ea07-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100
Slew (in absolute deg)



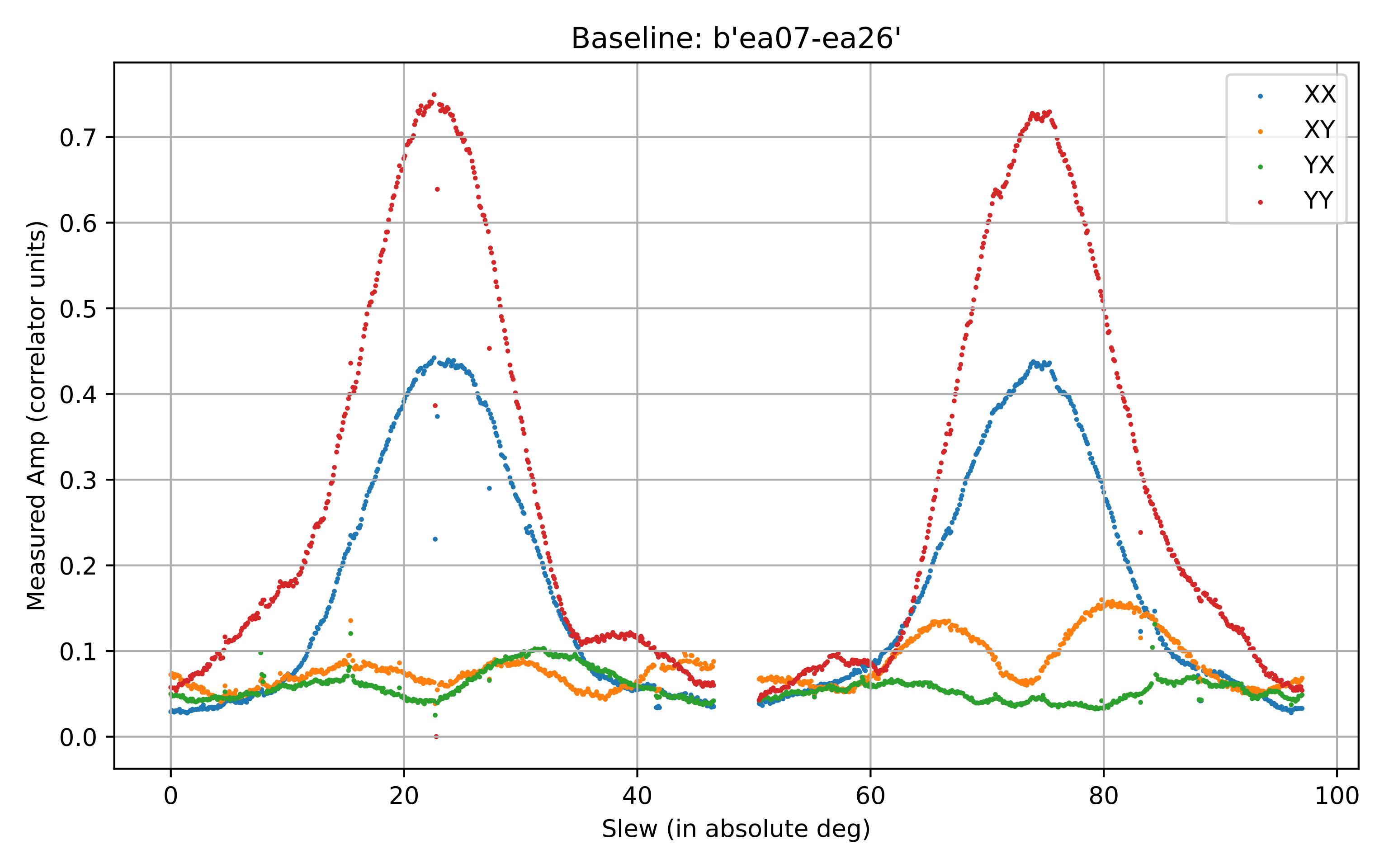
Baseline: b'ea07-ea22'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100


Baseline: b'ea07-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100

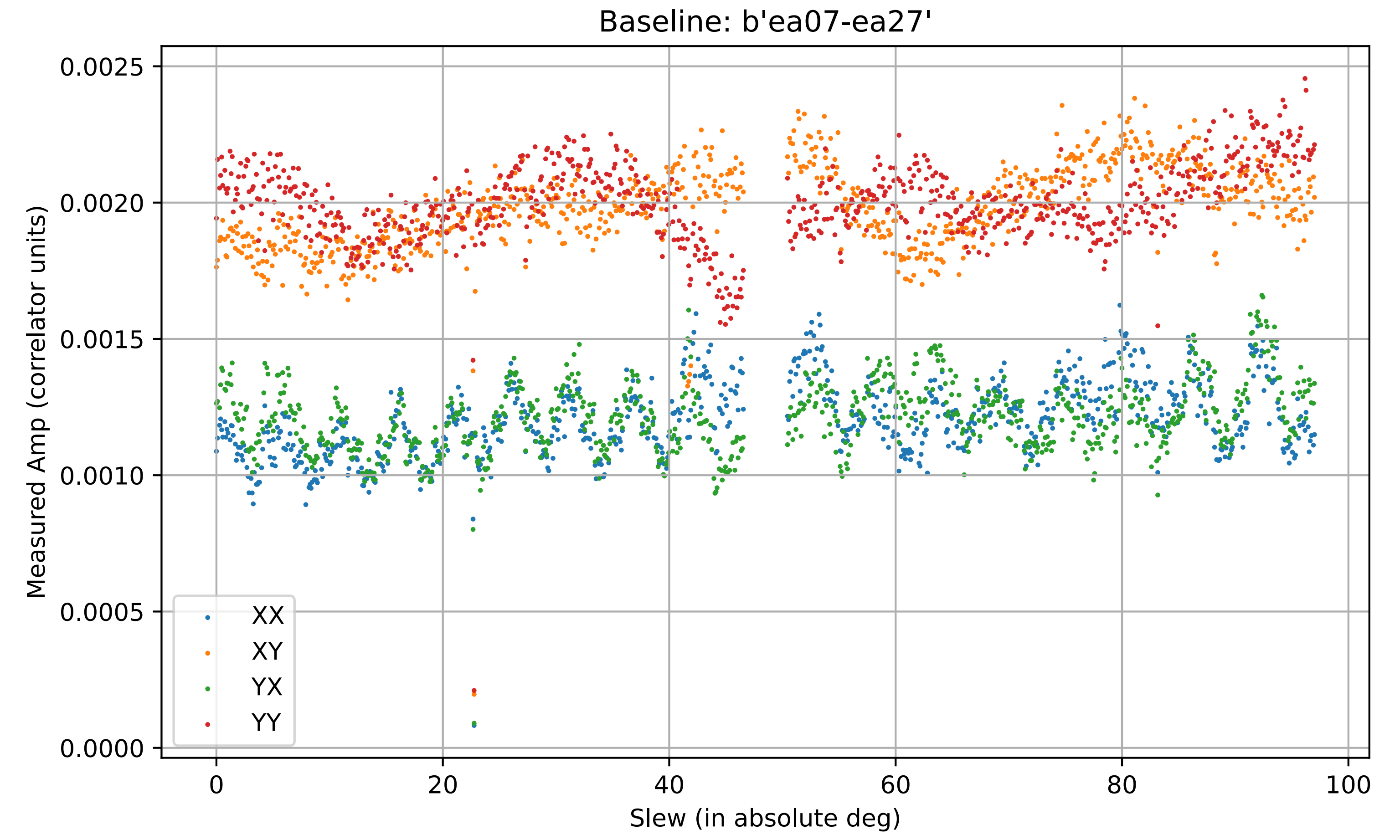

Baseline: b'ea07-ea24'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100



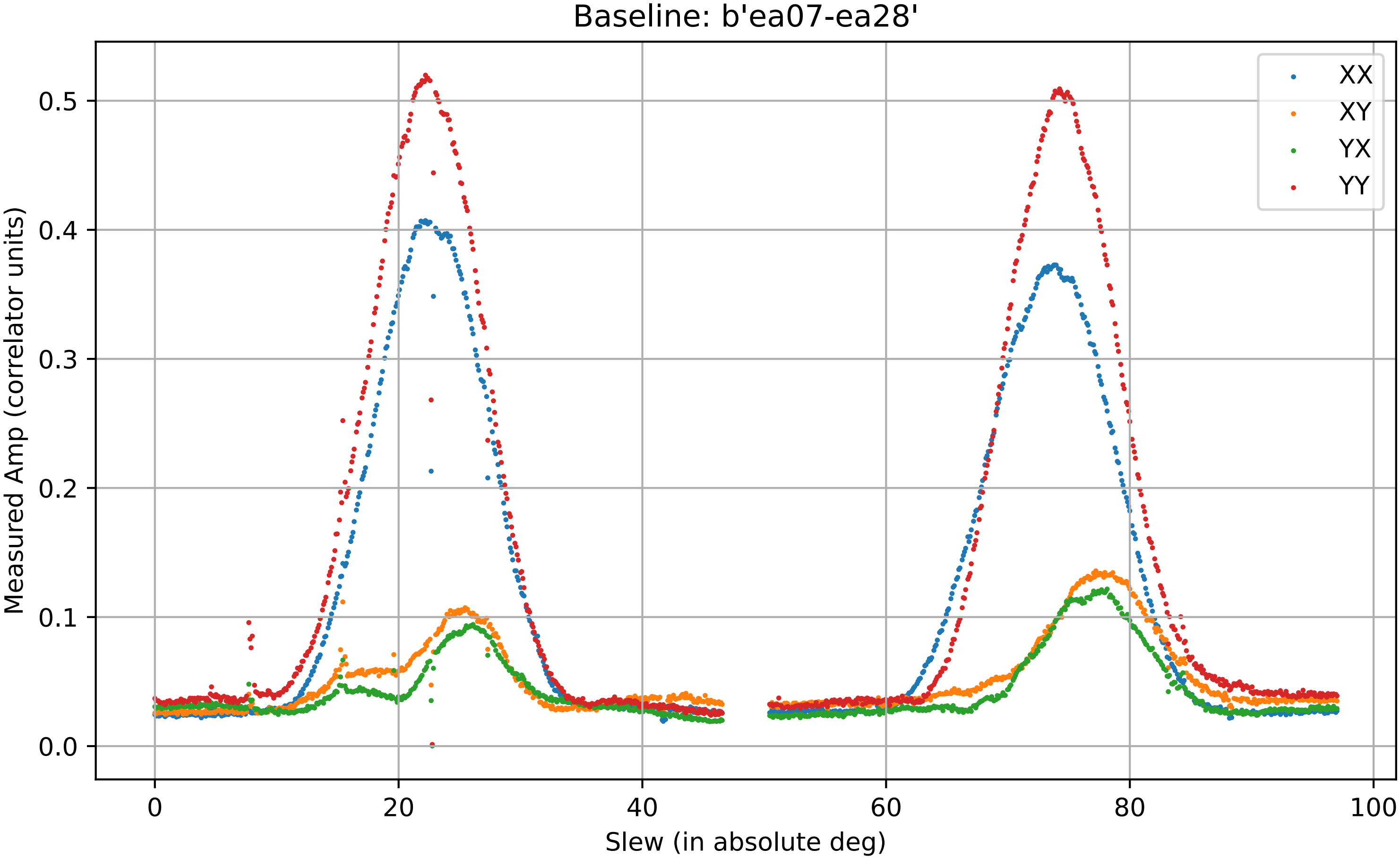
Baseline: b'ea07-ea25'
Measured Amp (correlator units)
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

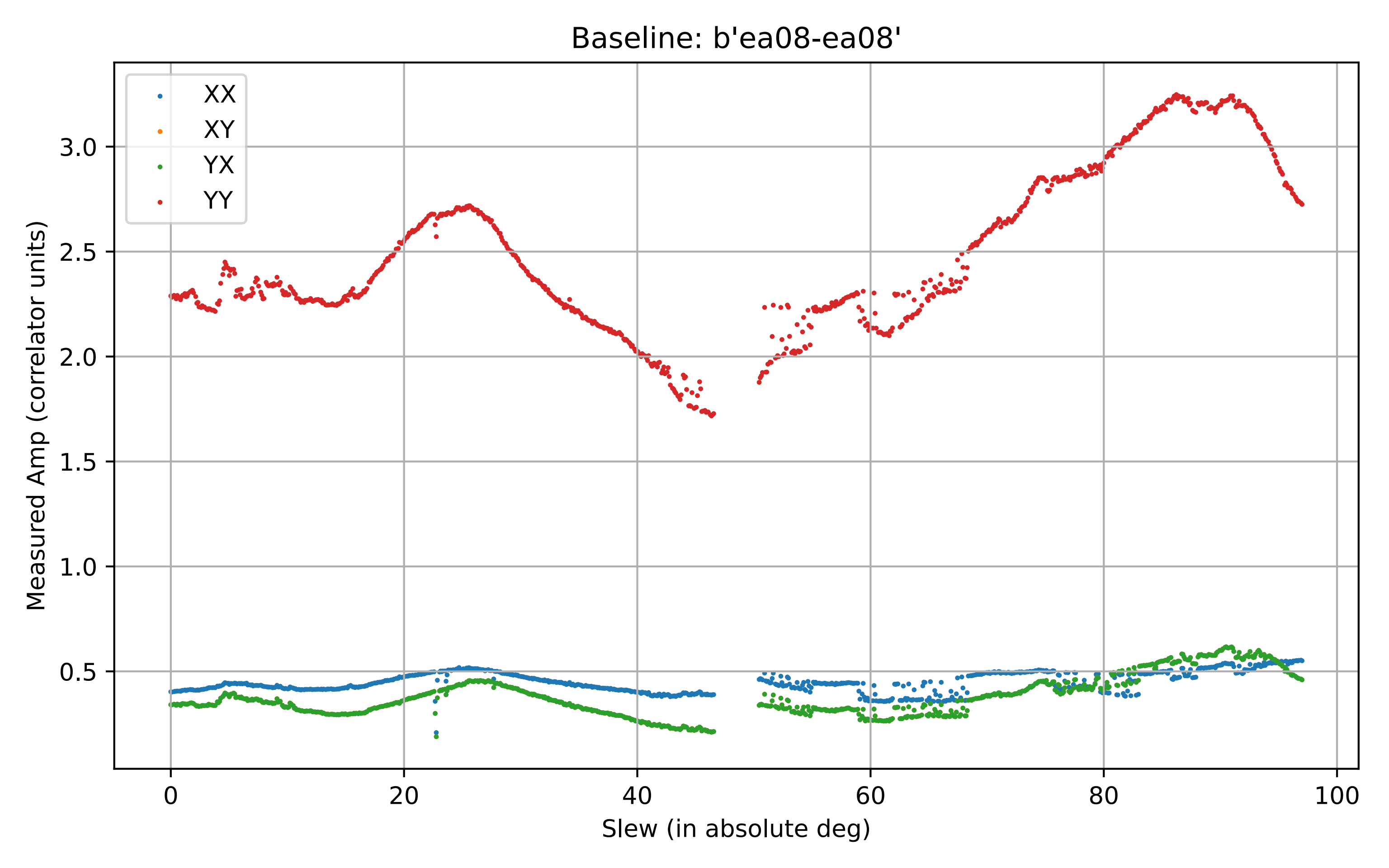


Baseline: b'ea07-ea26'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
20
40
60
80
100
Slew (in absolute deg)

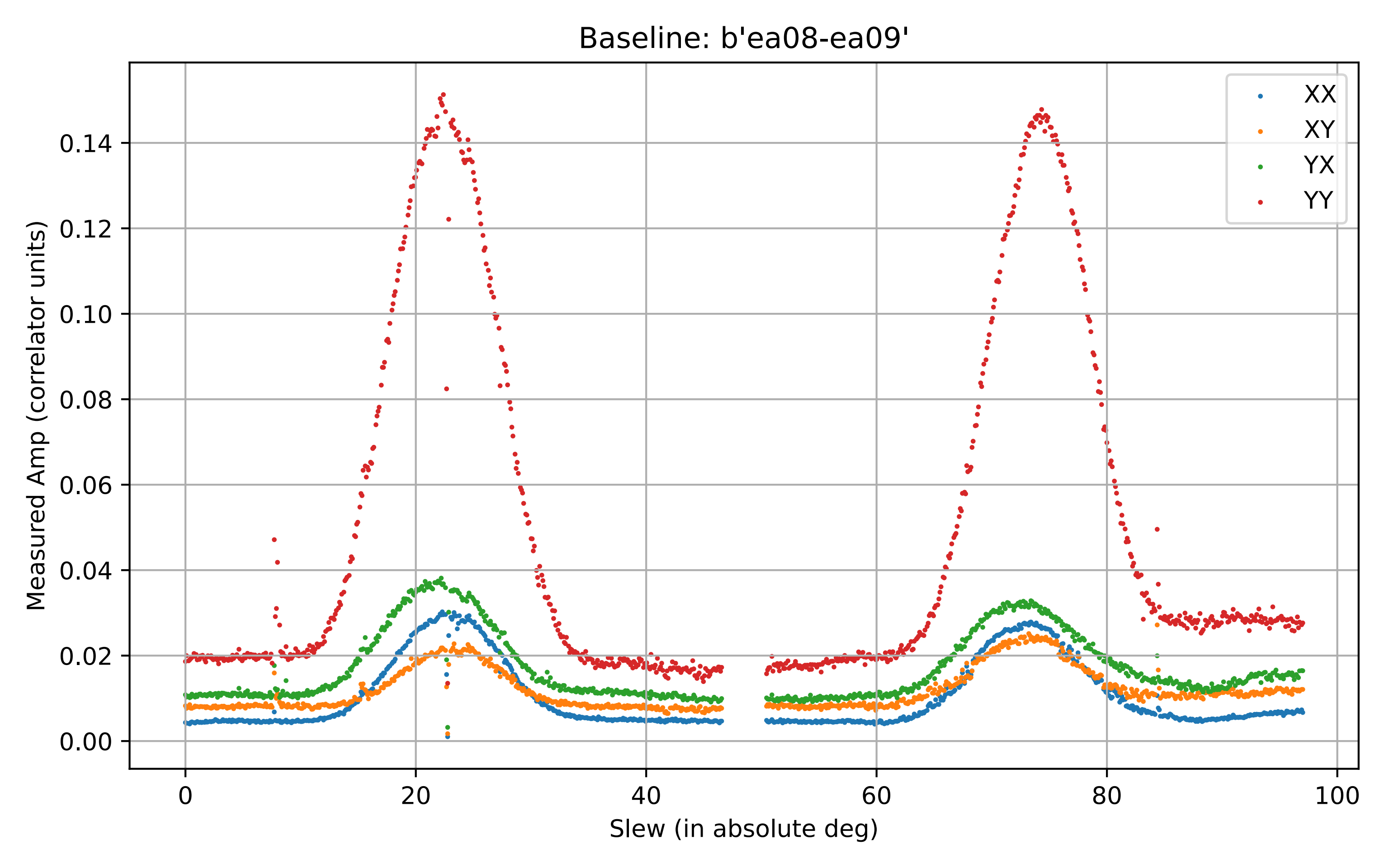


Baseline: b'ea07-ea27'
Measured Amp (correlator units)
Slew (in absolute deg)
0.0000
0.0005
0.0010
0.0015
0.0020
0.0025
0
20
40
60
80
100
XX
XY
YX
YY

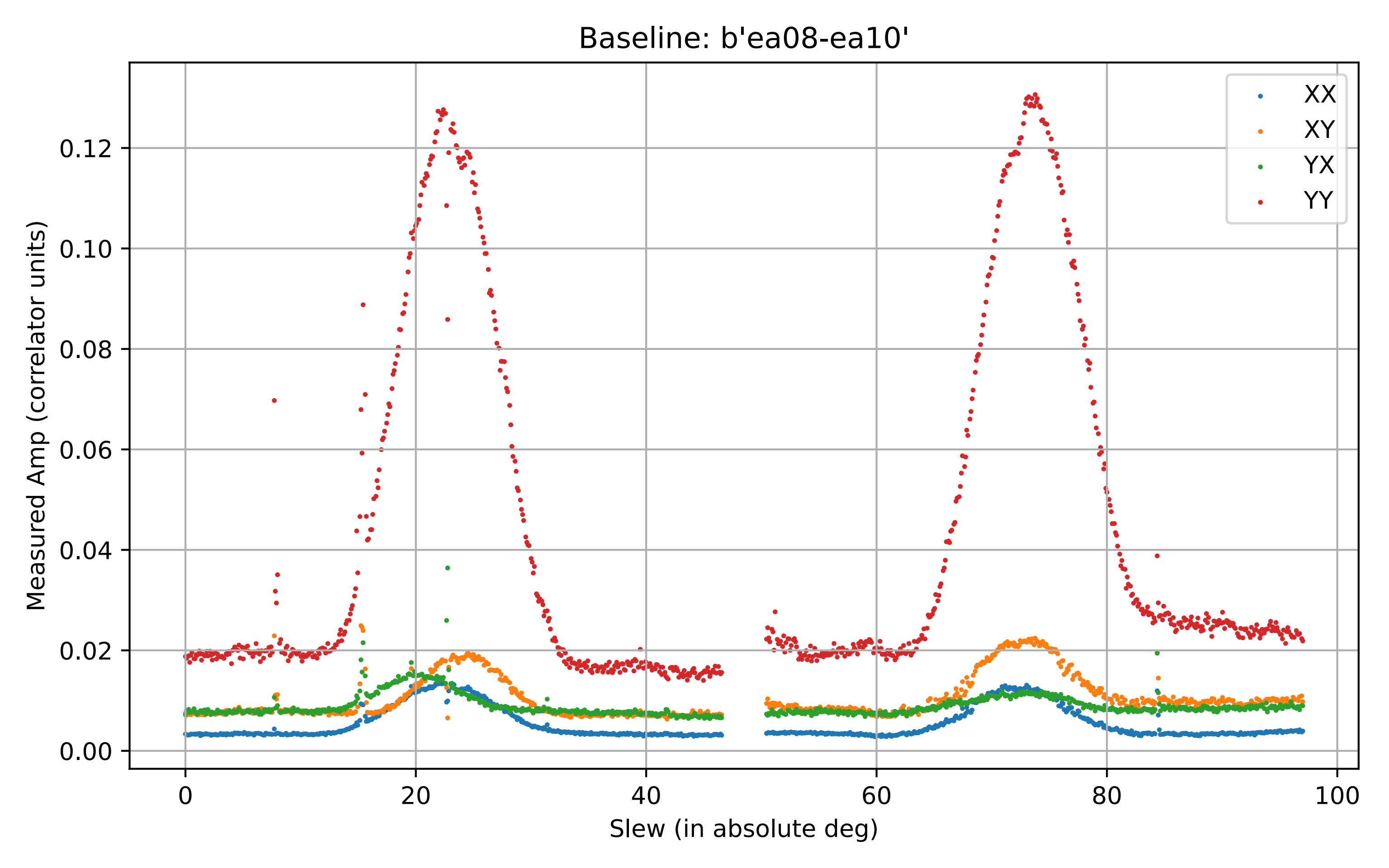

Baseline: b'ea07-ea28'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100



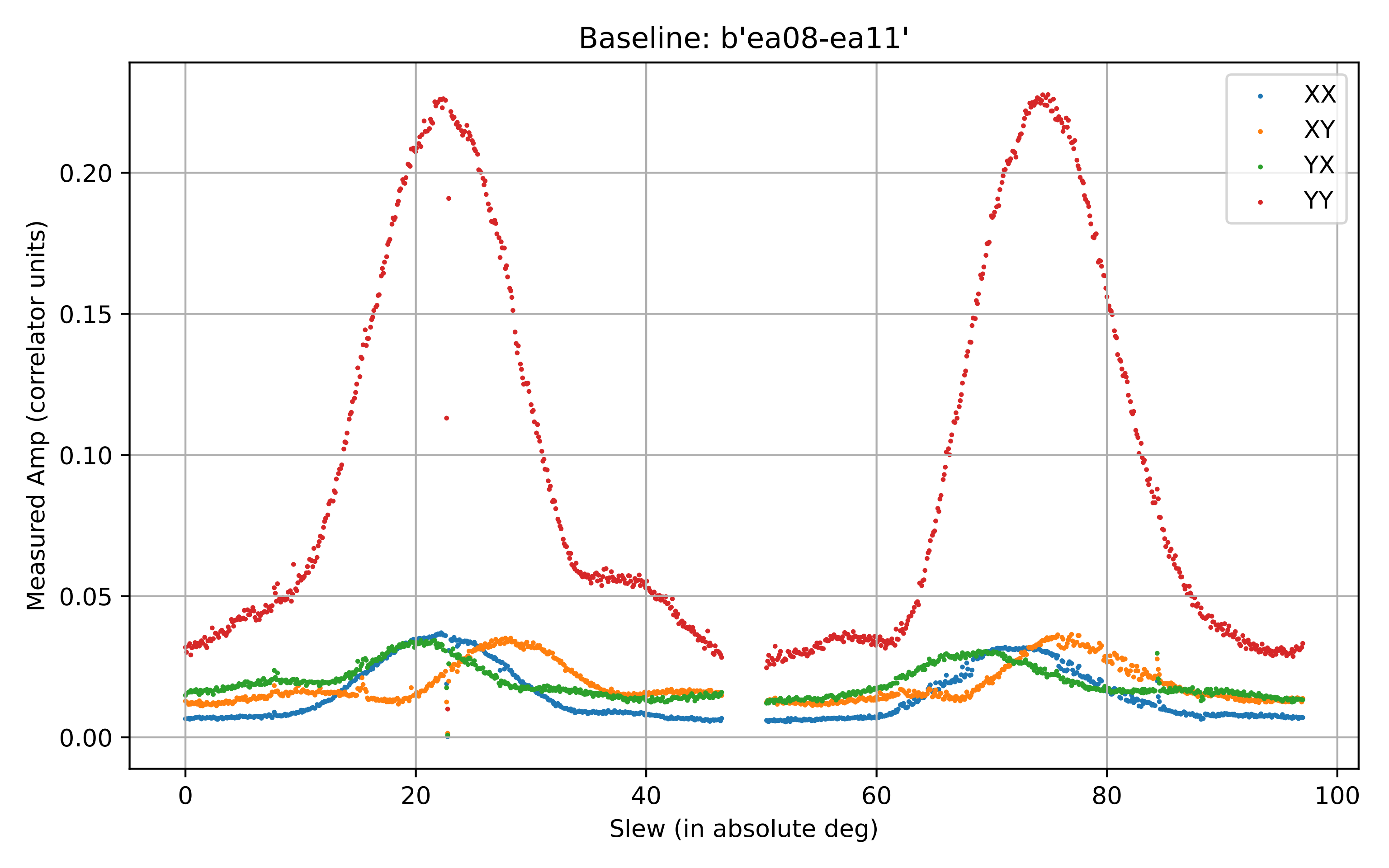
Baseline: b'ea08-ea08'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.5
1.0
1.5
2.0
2.5
3.0
0
20
40
60
80
100

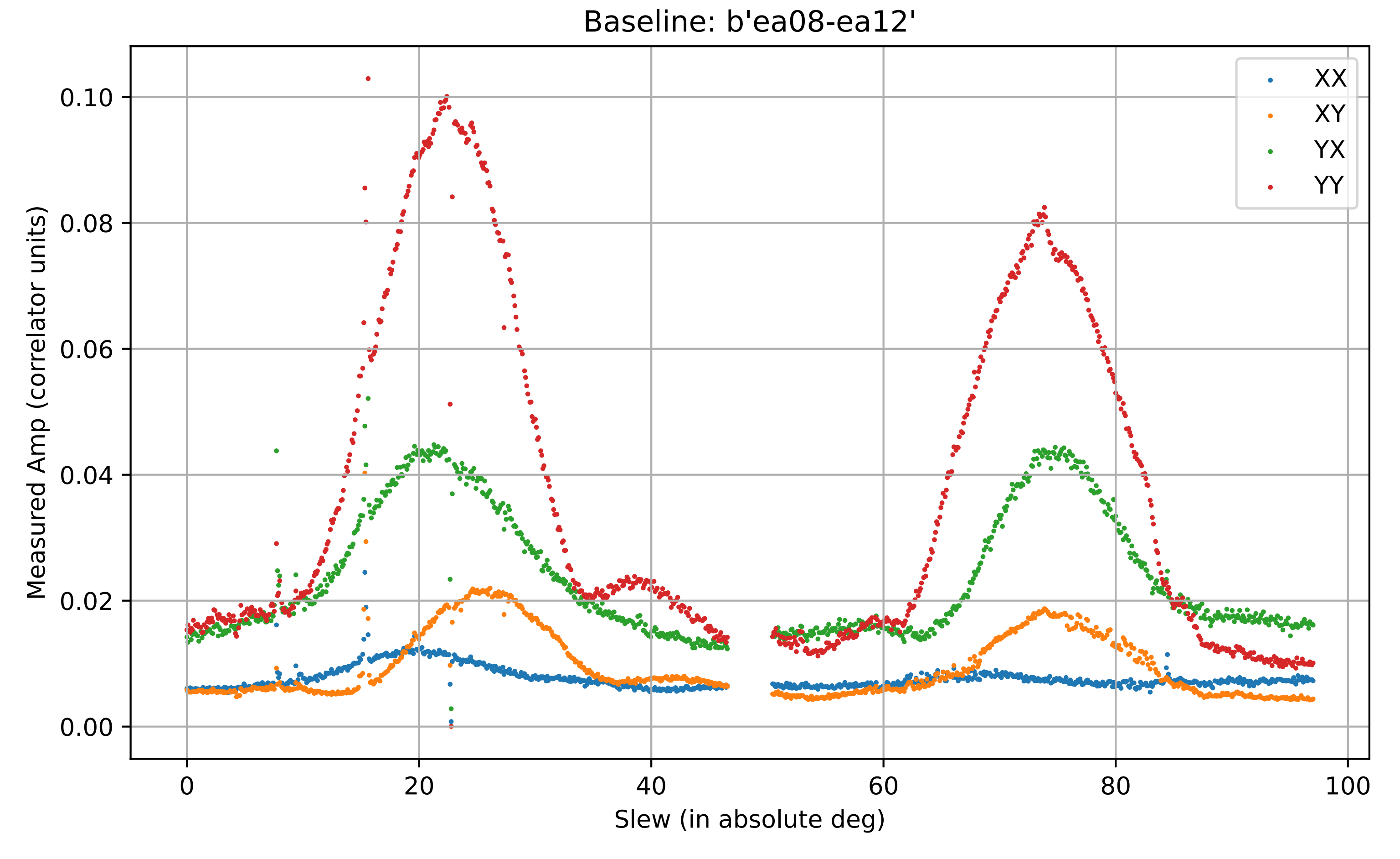


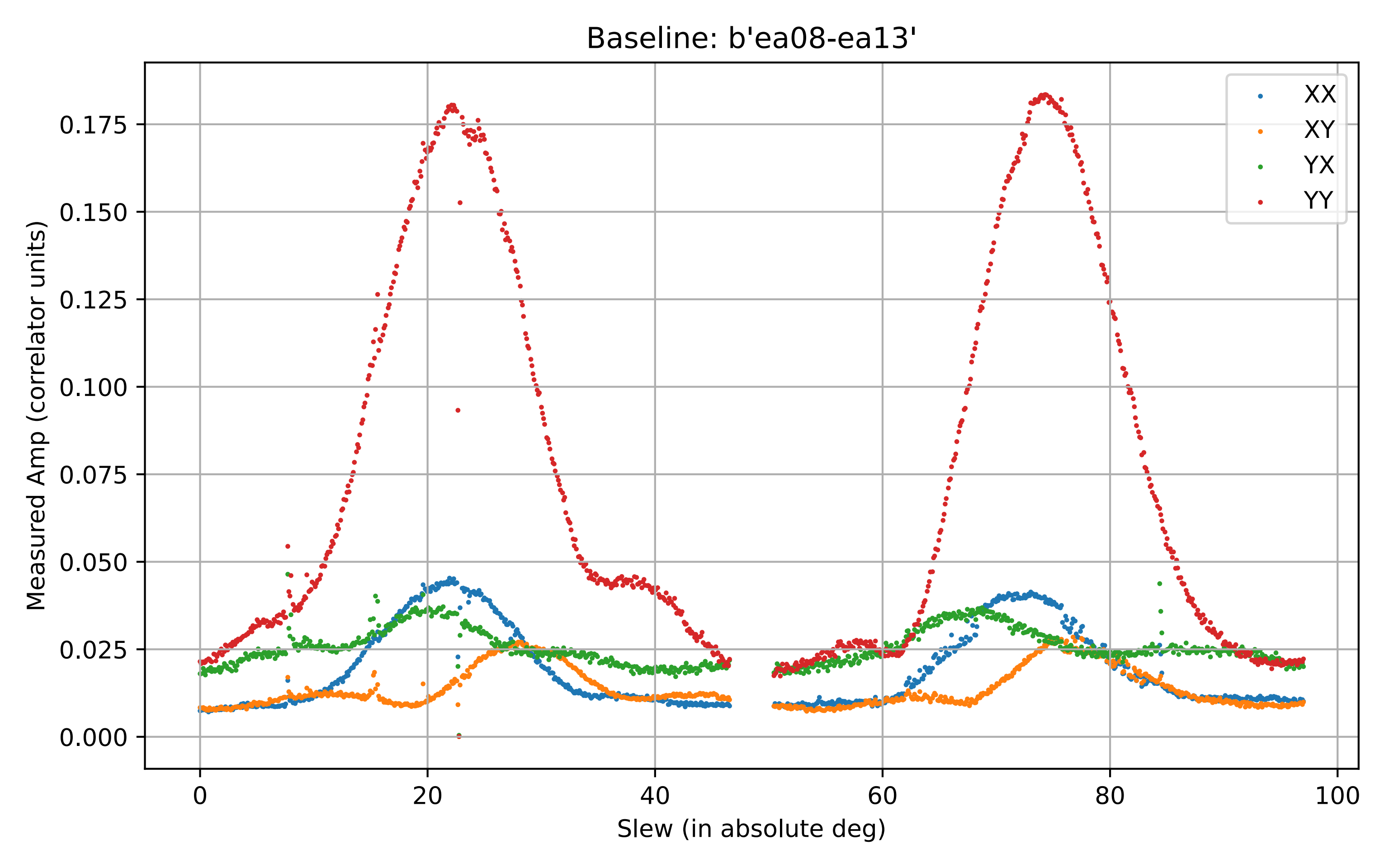
Baseline: b'ea08-ea09'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
Slew (in absolute deg)



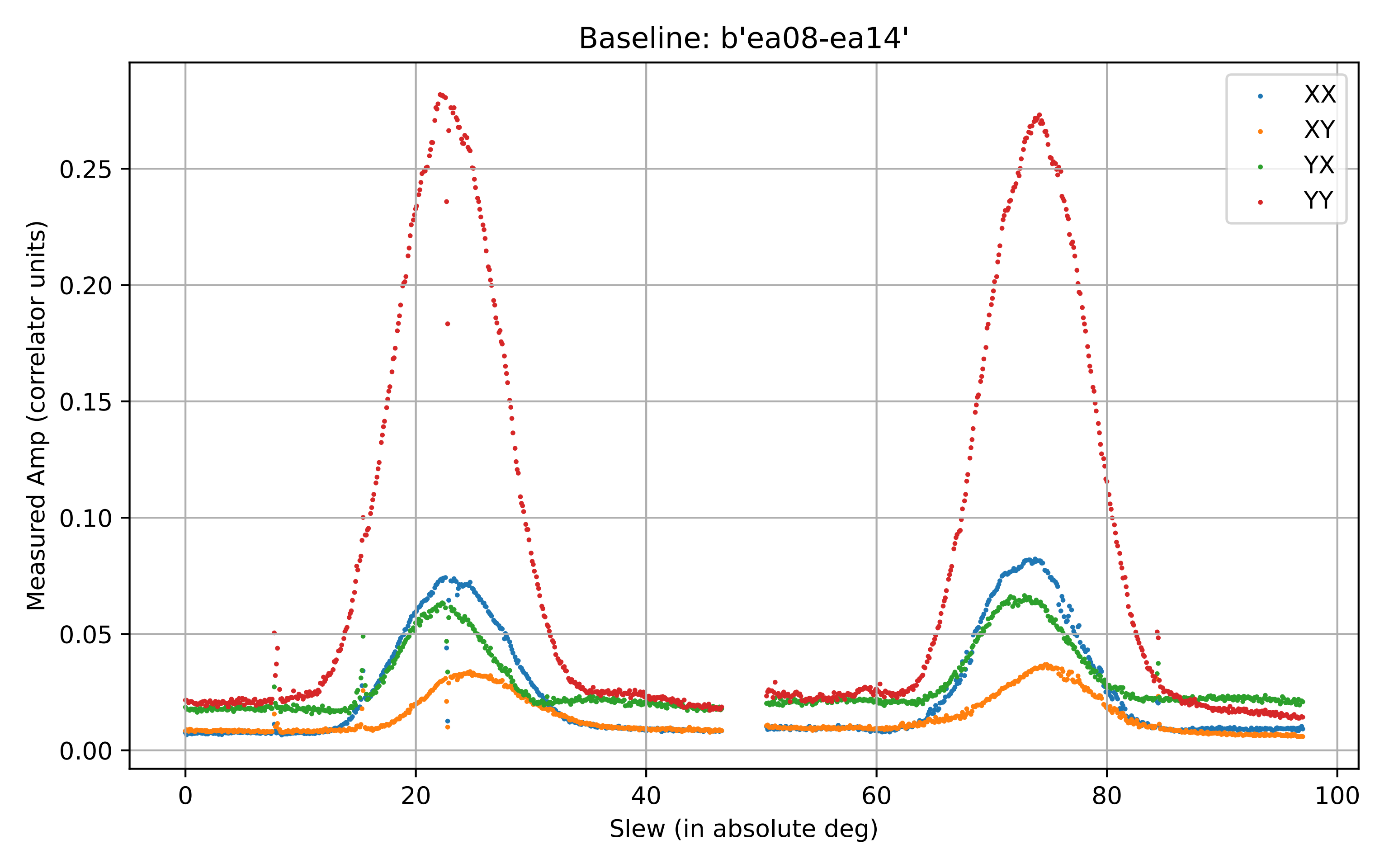
Baseline: b'ea08-ea10'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100

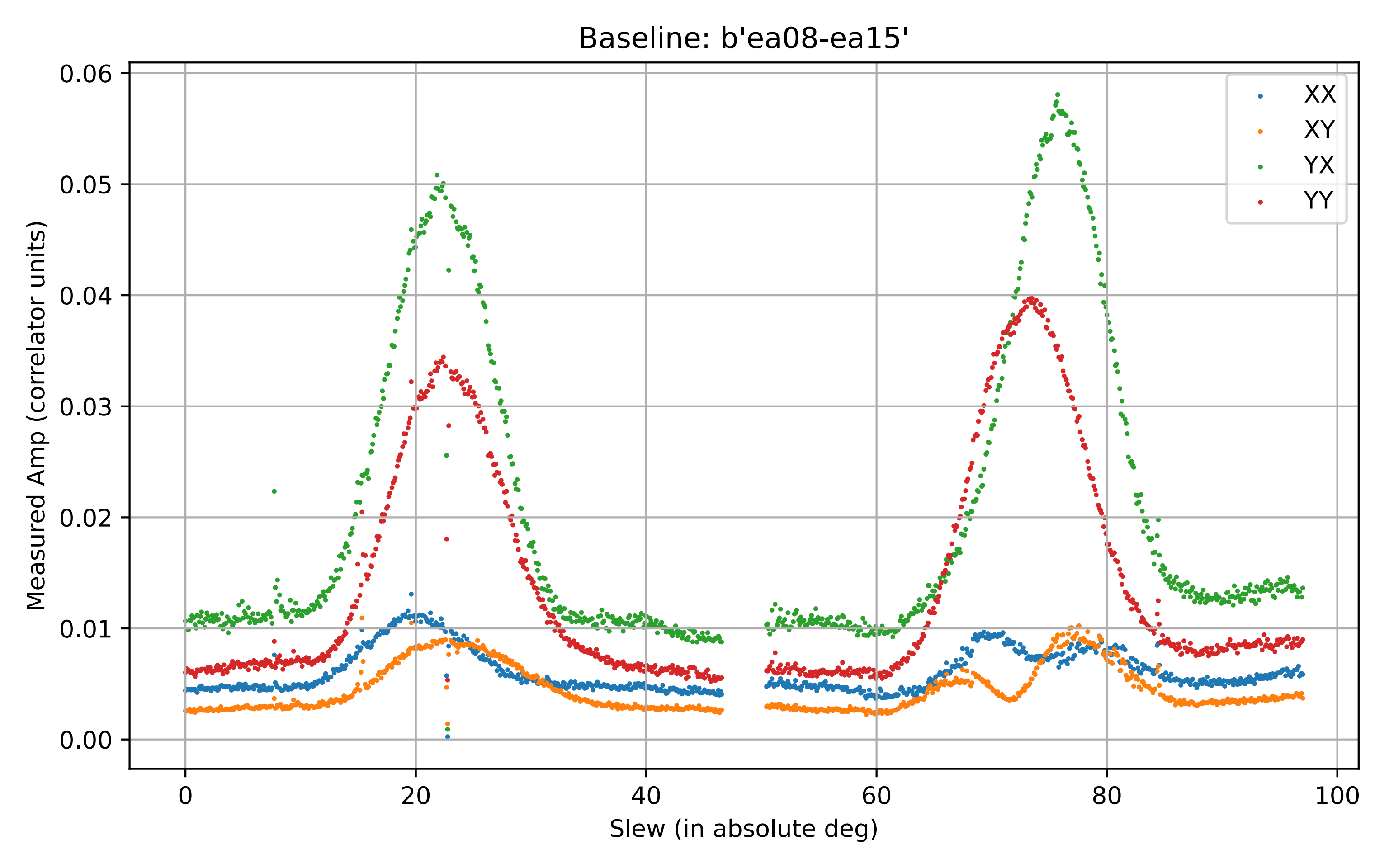

Baseline: b'ea08-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100

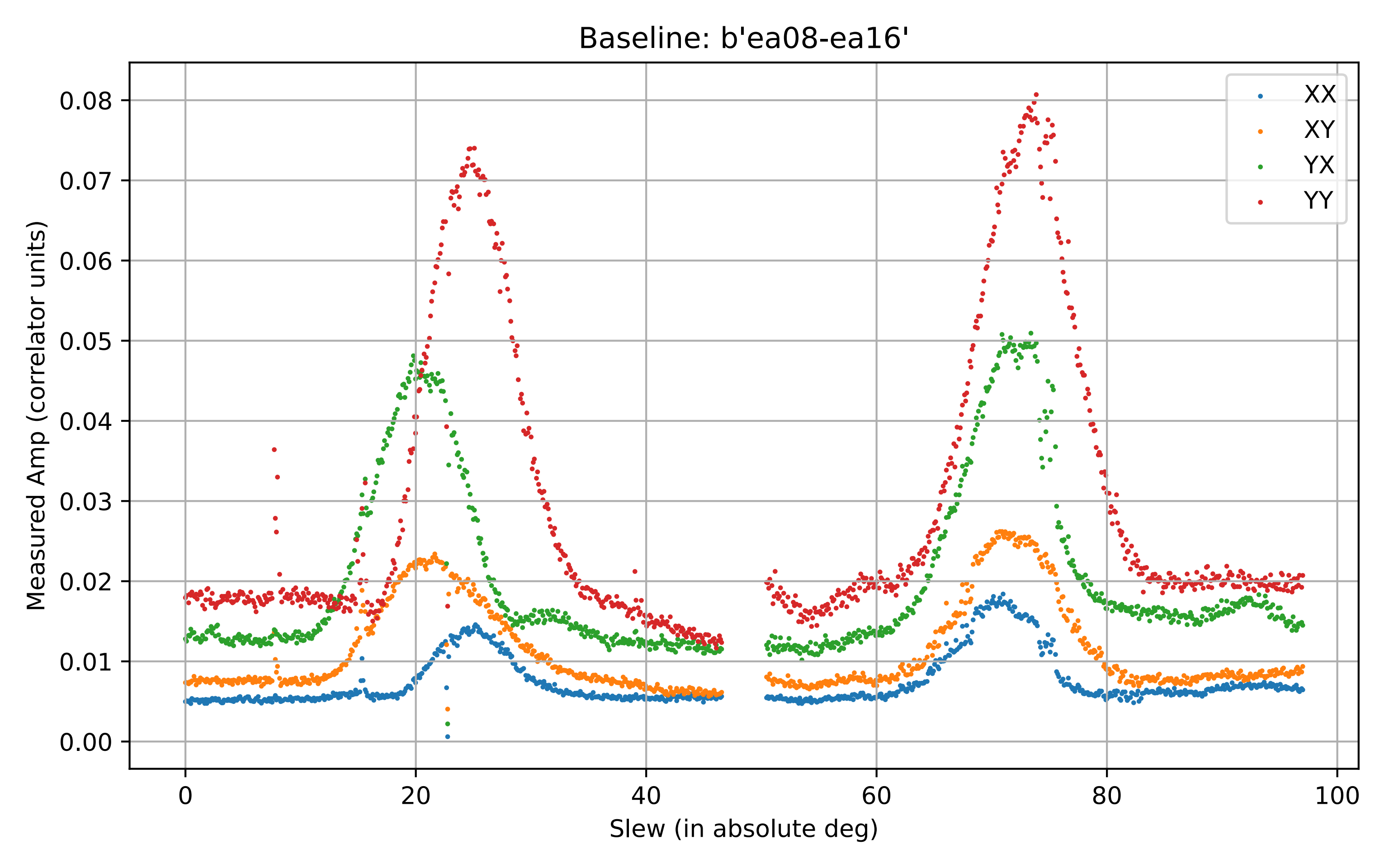

Baseline: b'ea08-ea12'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100



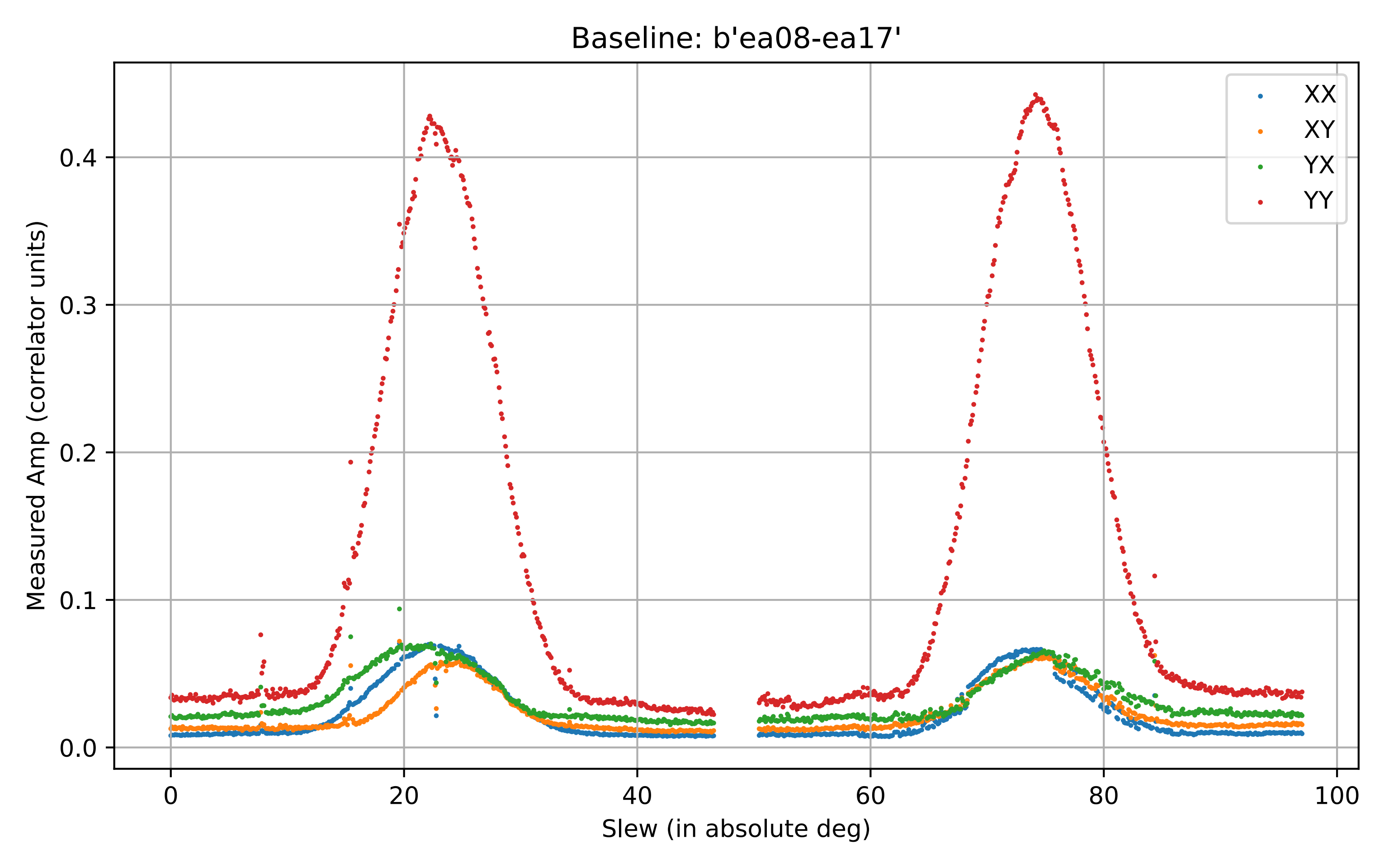
Baseline: b'ea08-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100
XX
XY
YX
YY


Baseline: b'ea08-ea14'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100

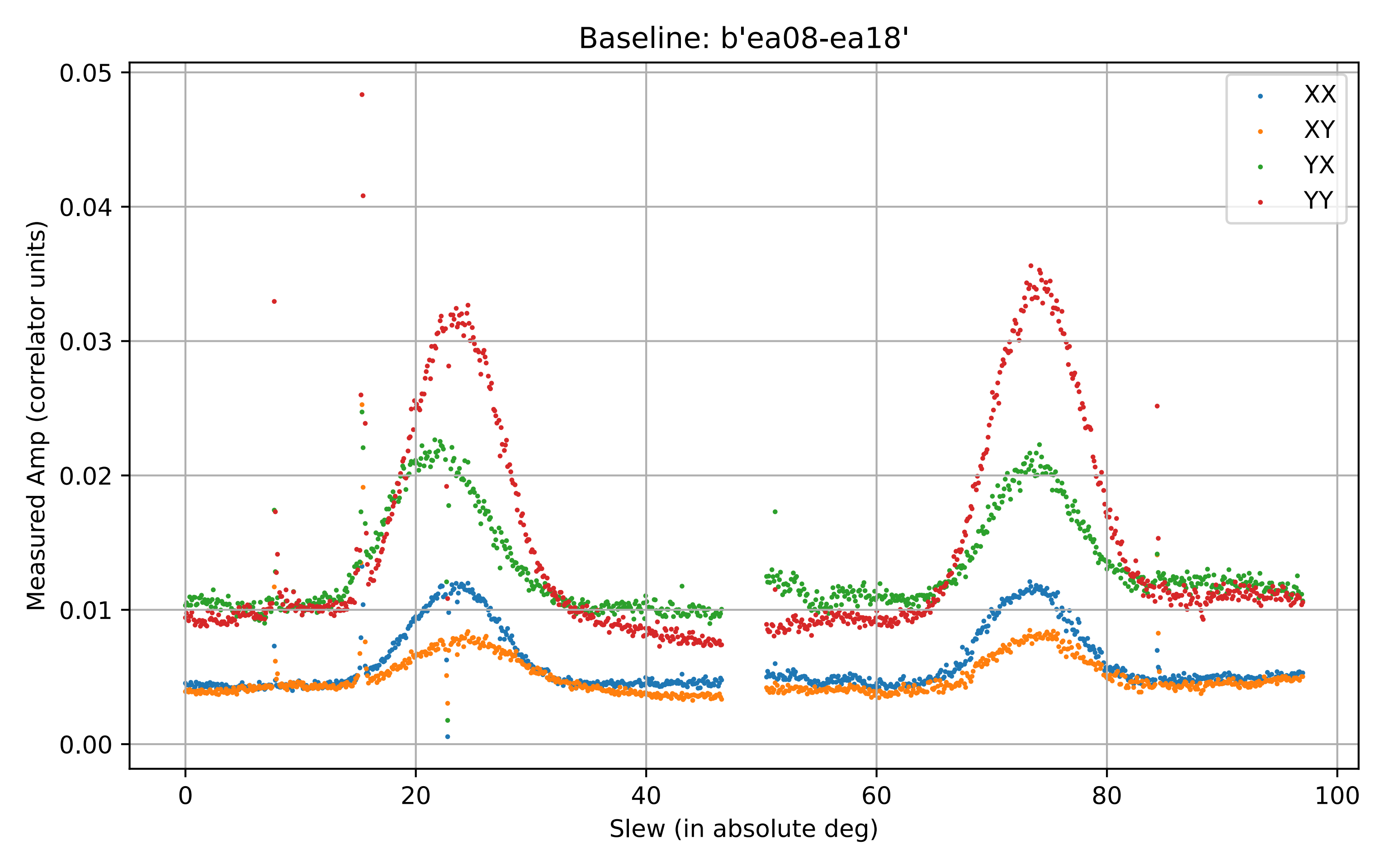

Baseline: b'ea08-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100
Slew (in absolute deg)



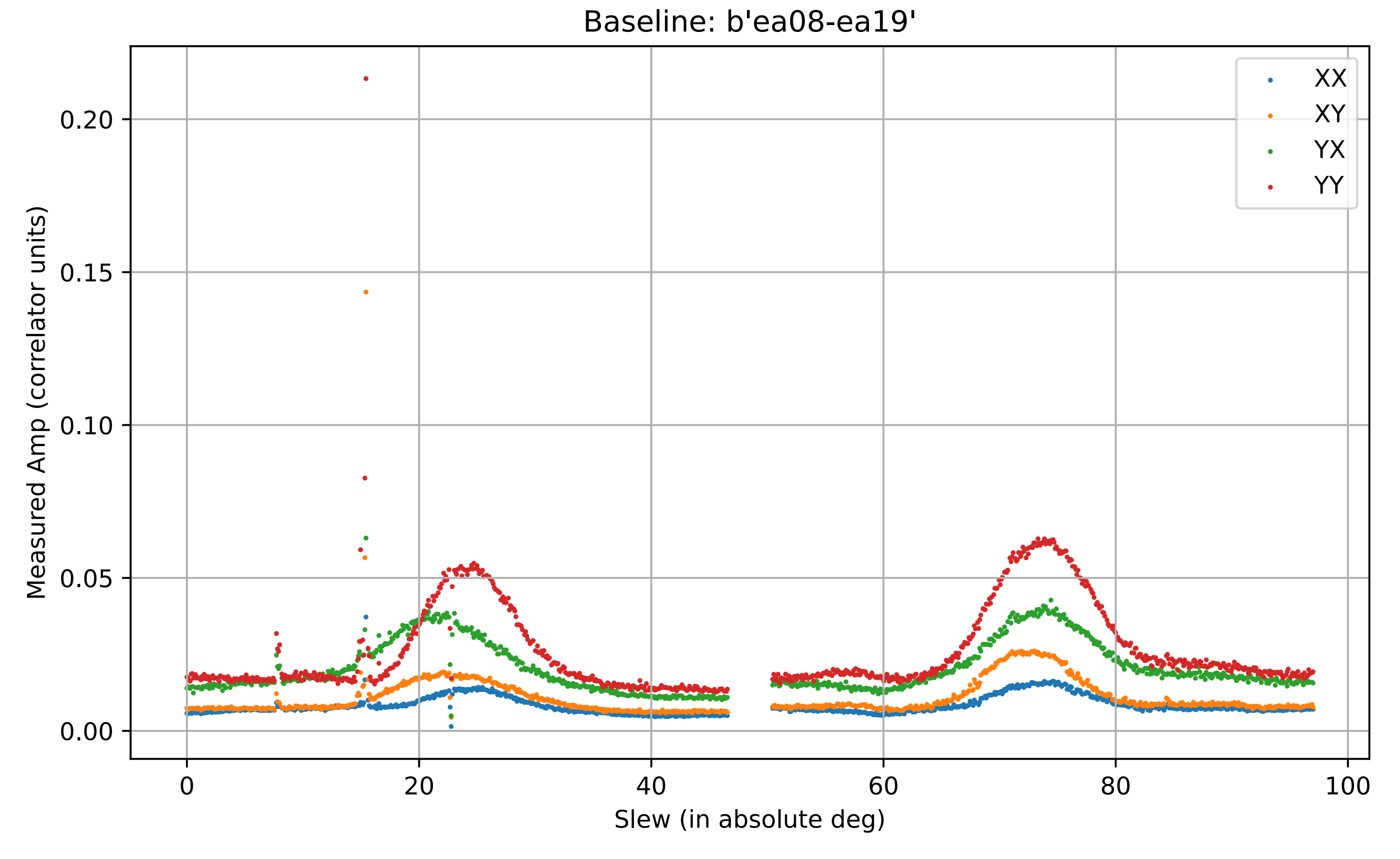
Baseline: b'ea08-ea16'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0
20
40
60
80
100
Slew (in absolute deg)



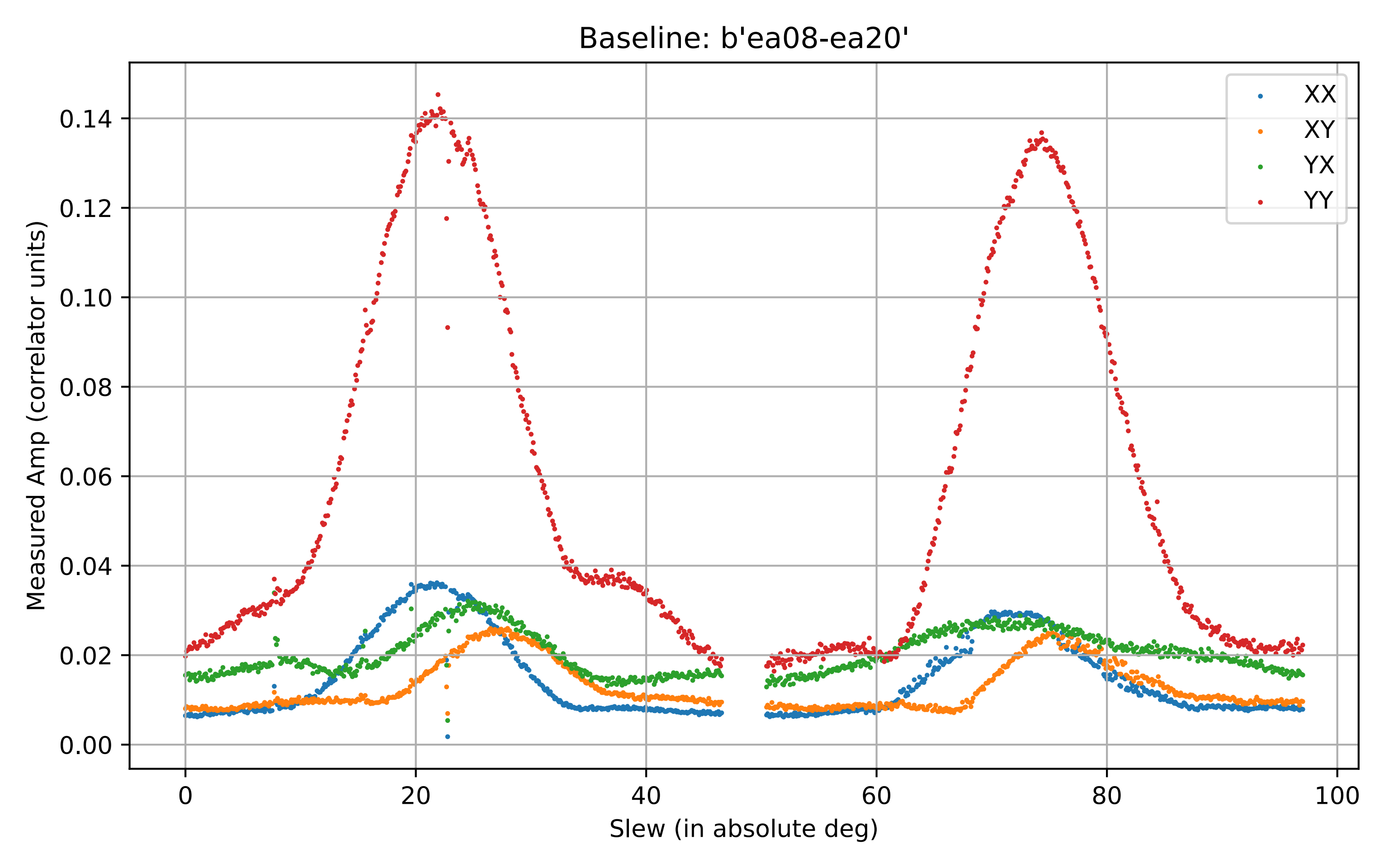
Baseline: b'ea08-ea17'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100
Slew (in absolute deg)

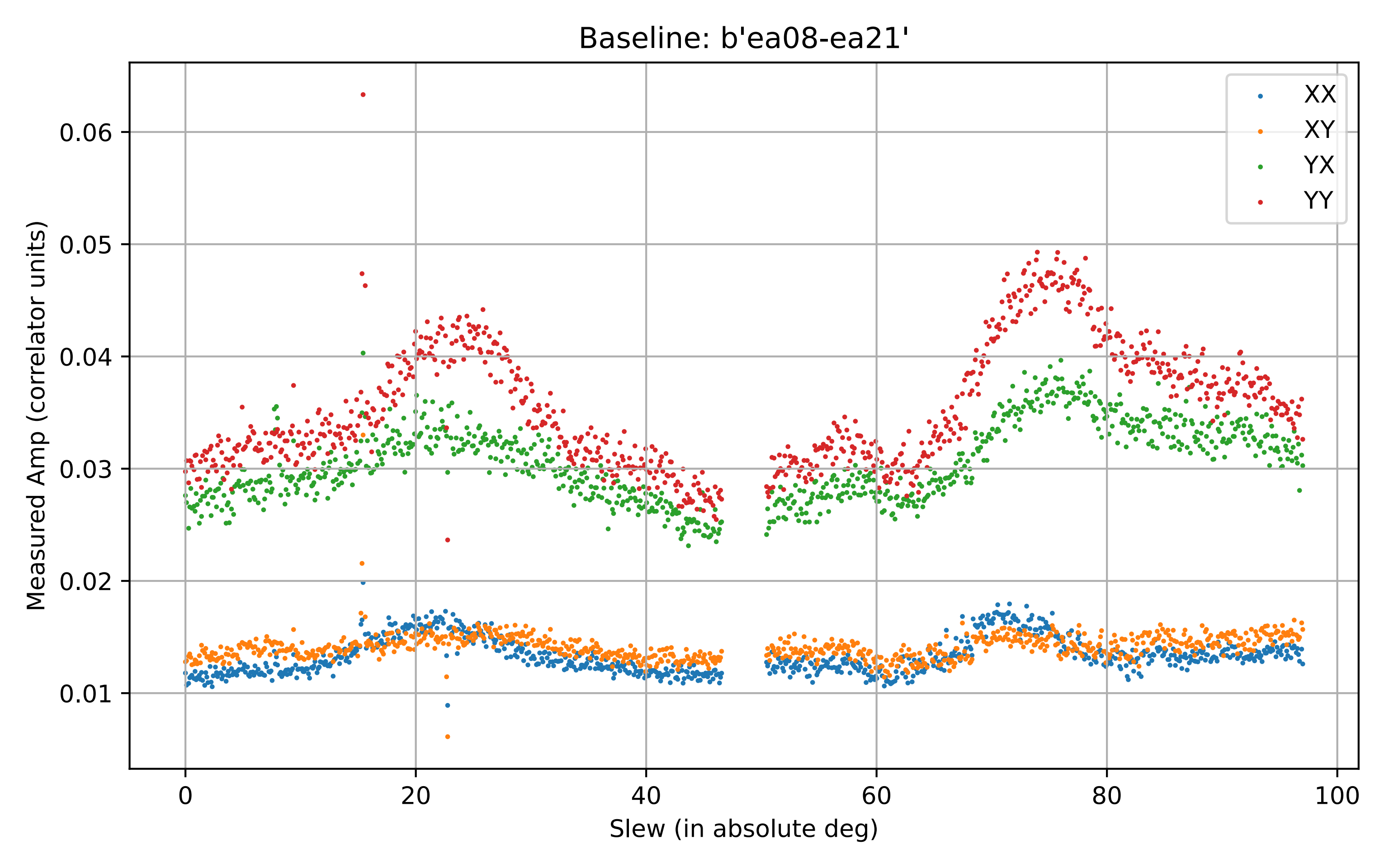


Baseline: b'ea08-ea18'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0
20
40
60
80
100
Slew (in absolute deg)

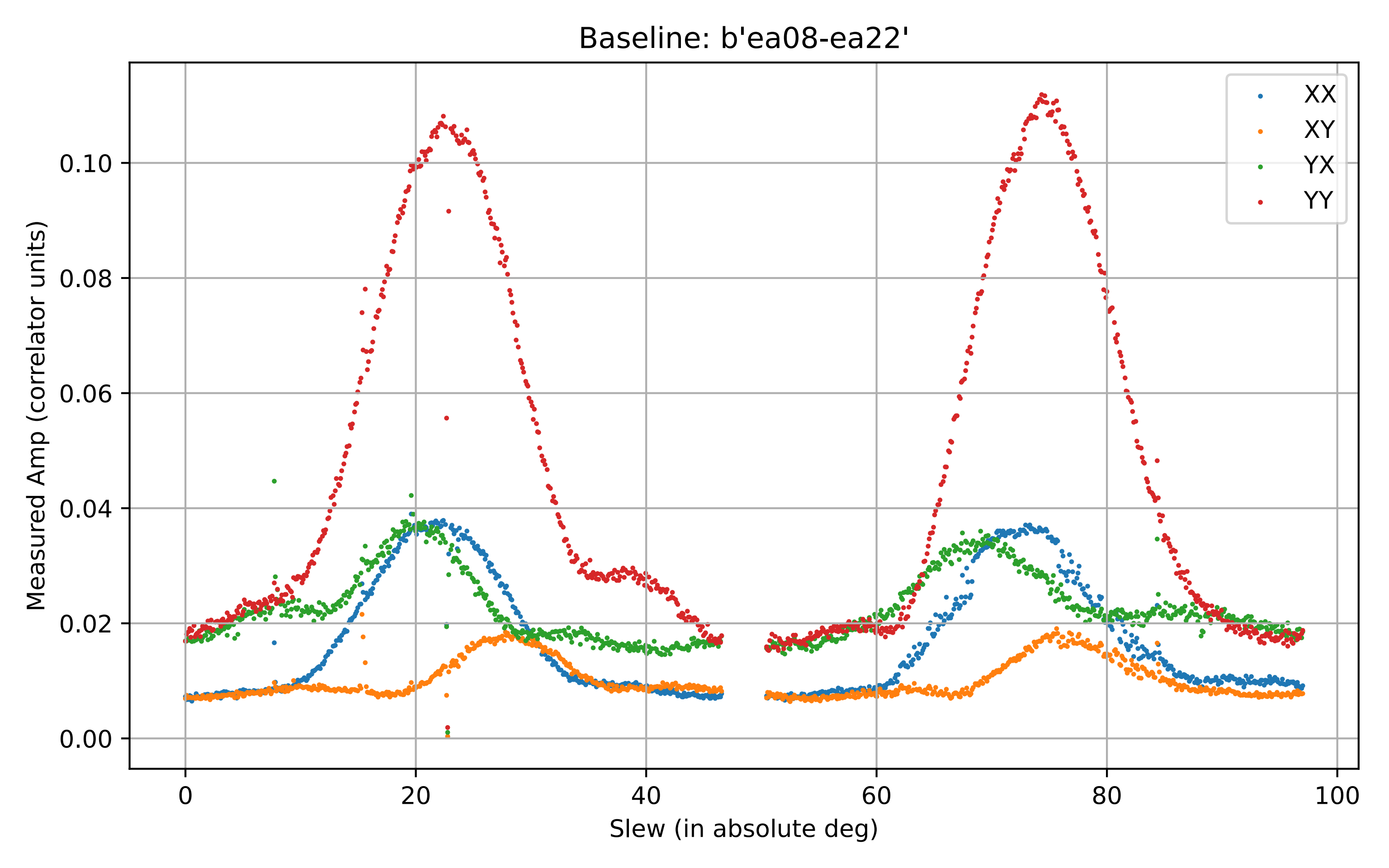


Baseline: b'ea08-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100

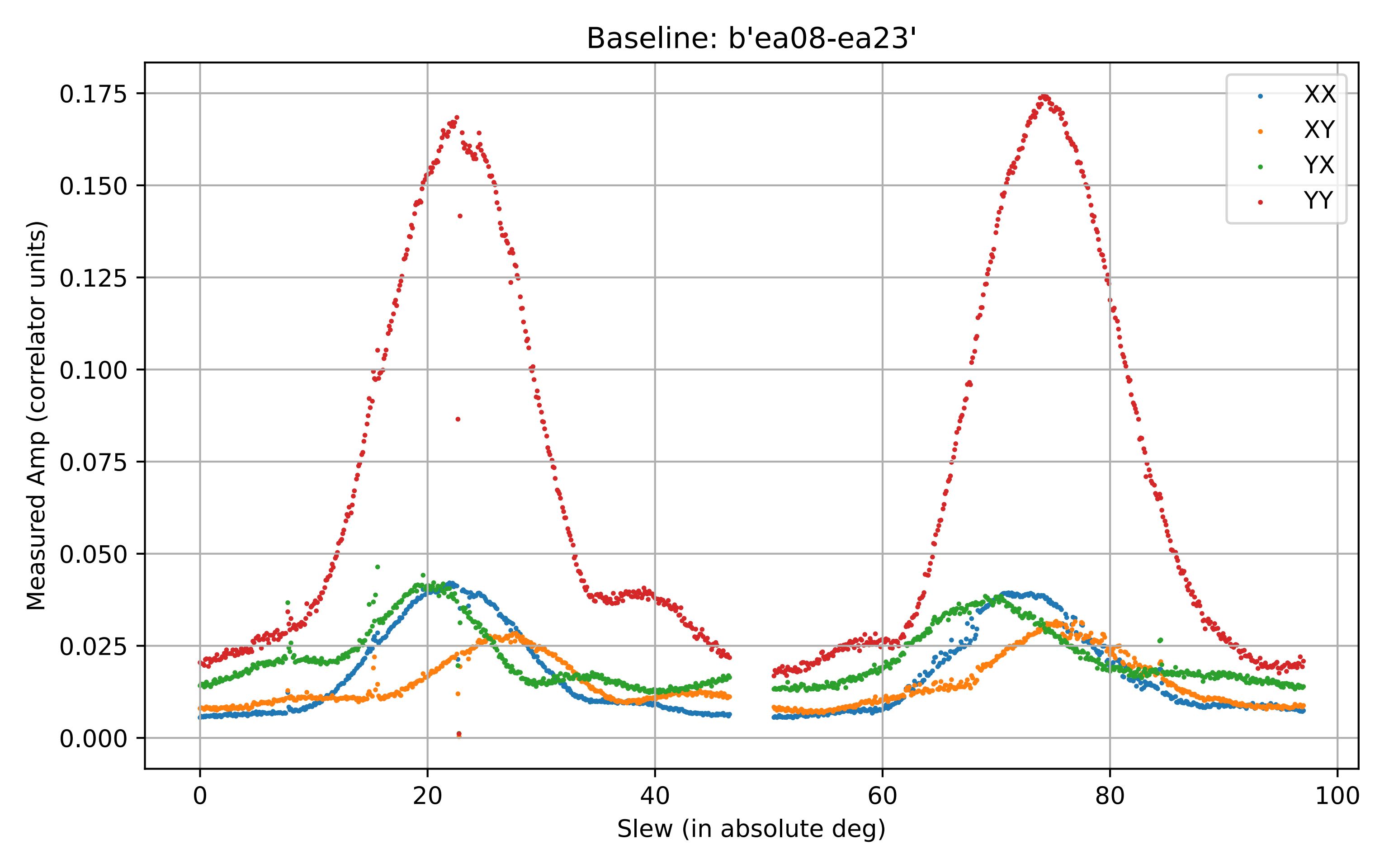

Baseline: b'ea08-ea20'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

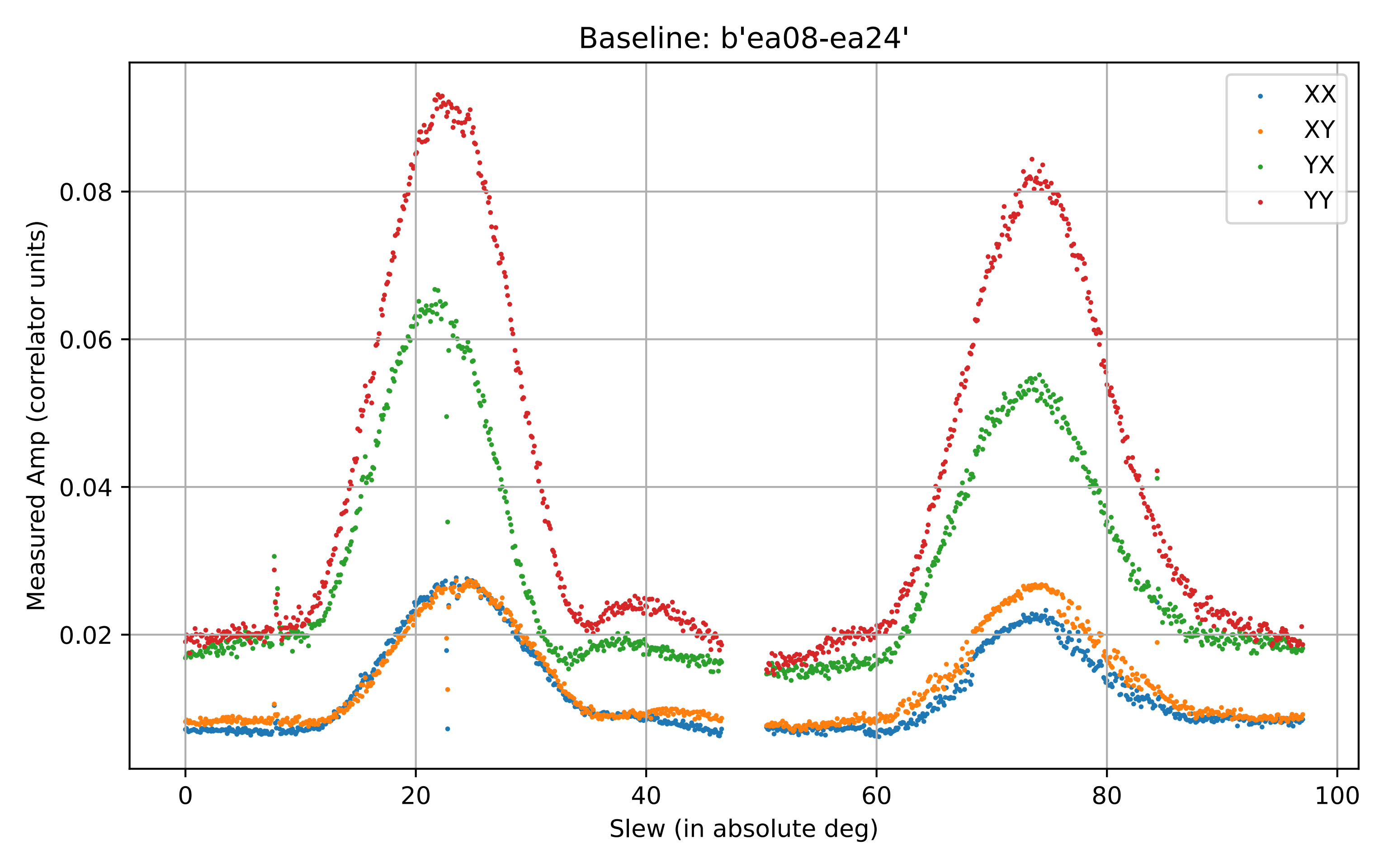


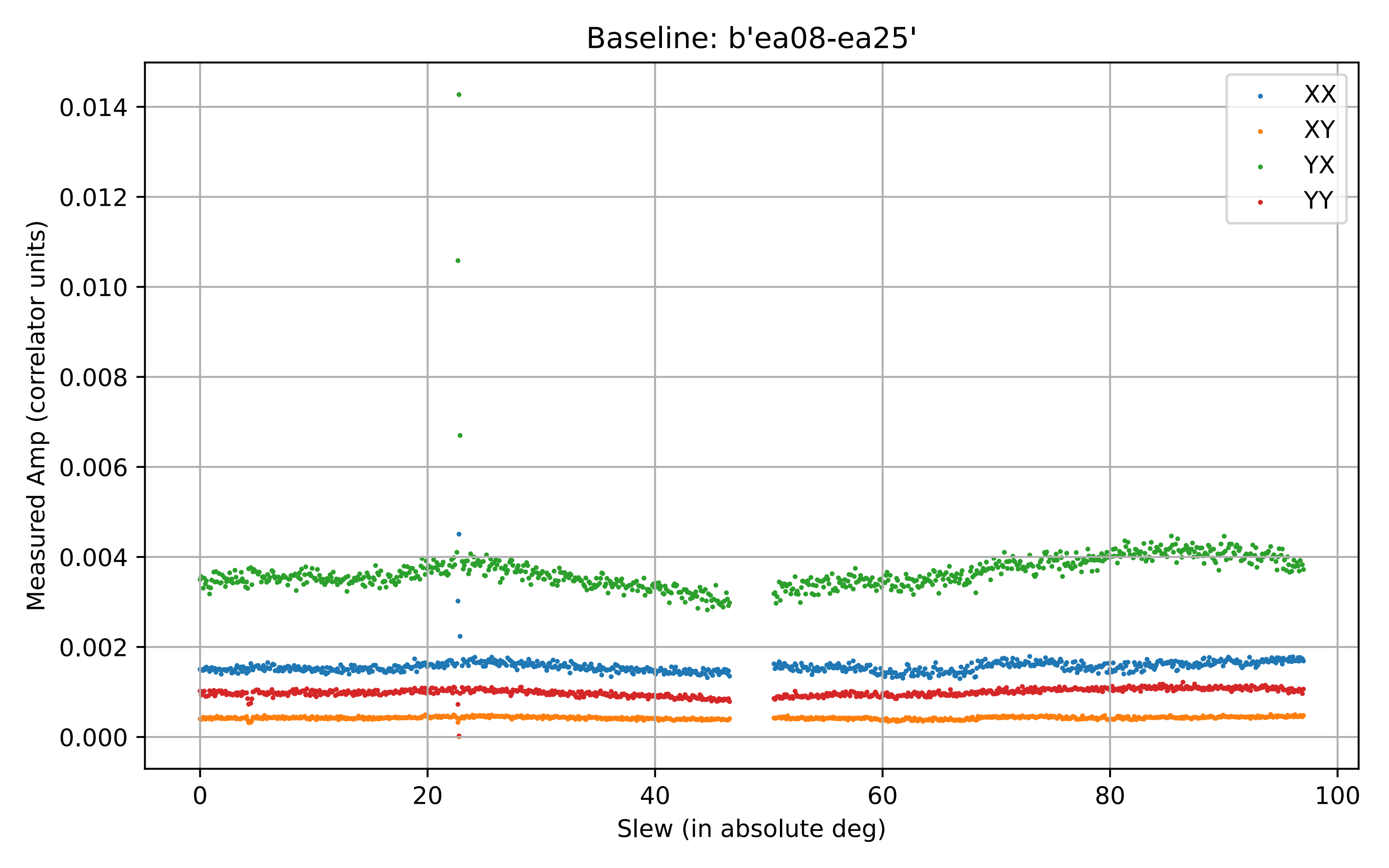
Baseline: b'ea08-ea21'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100



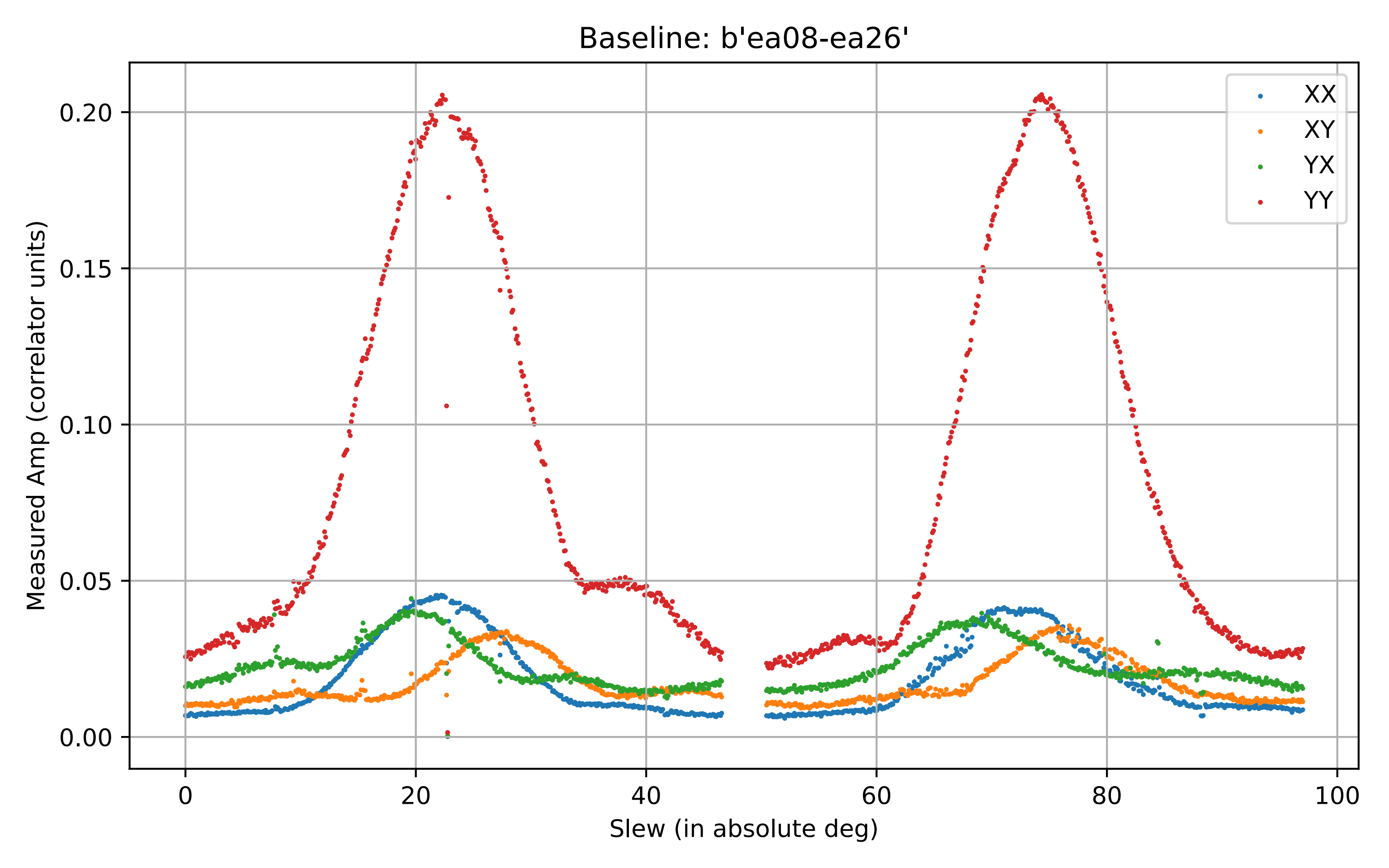
Baseline: b'ea08-ea22'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

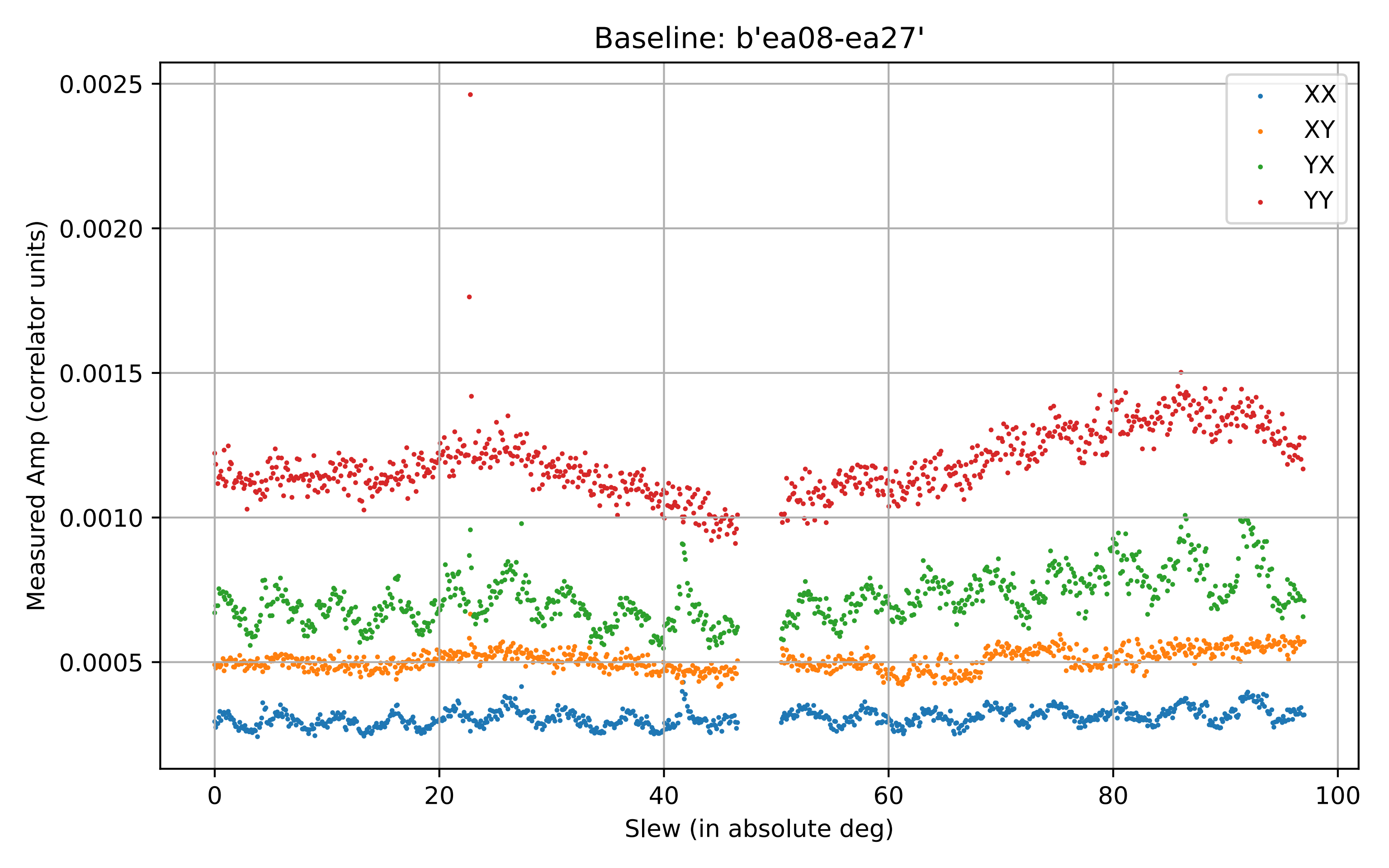

Baseline: b'ea08-ea23'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100
Slew (in absolute deg)

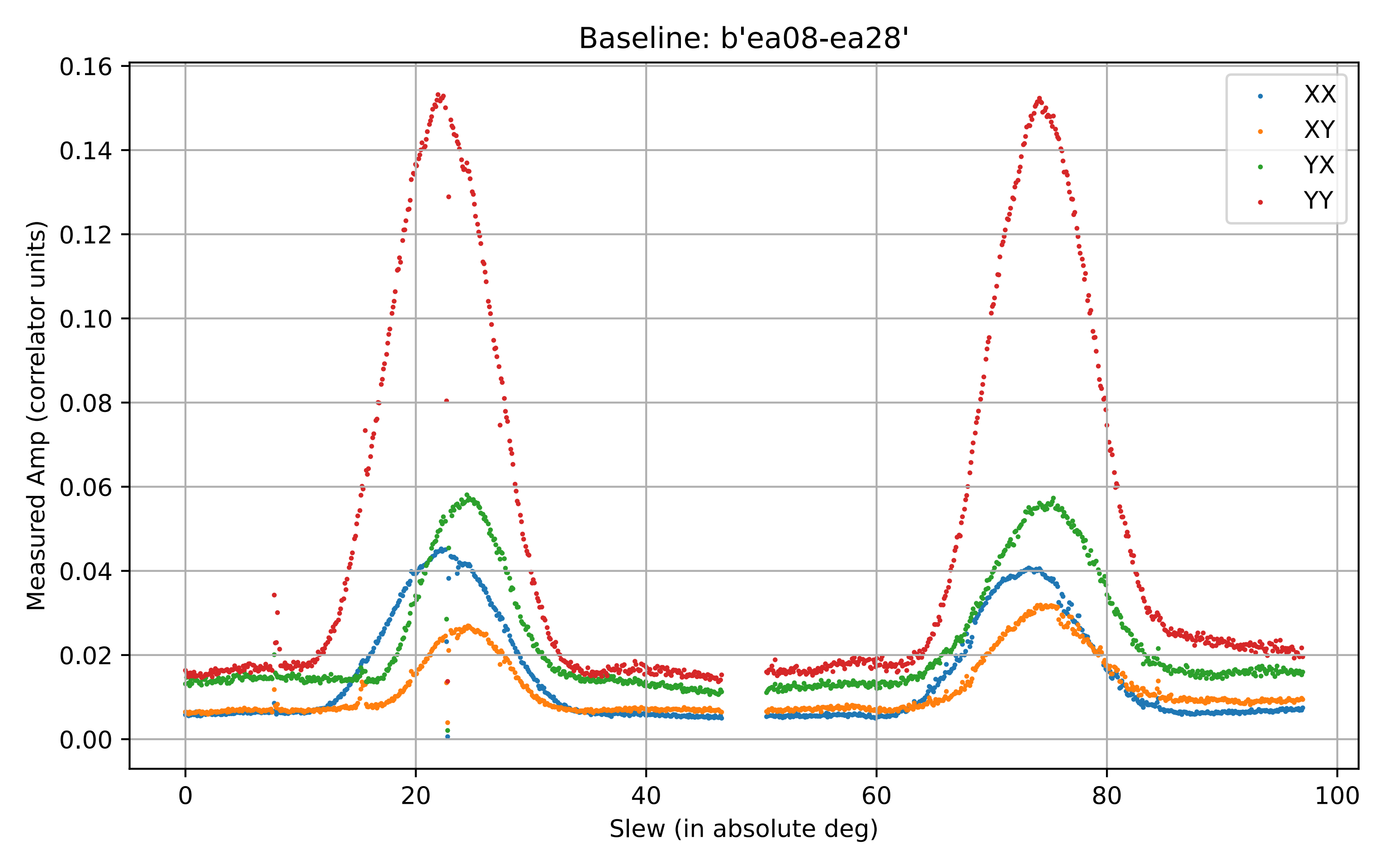

Baseline: b'ea08-ea24'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.02
0.04
0.06
0.08
0
20
40
60
80
100

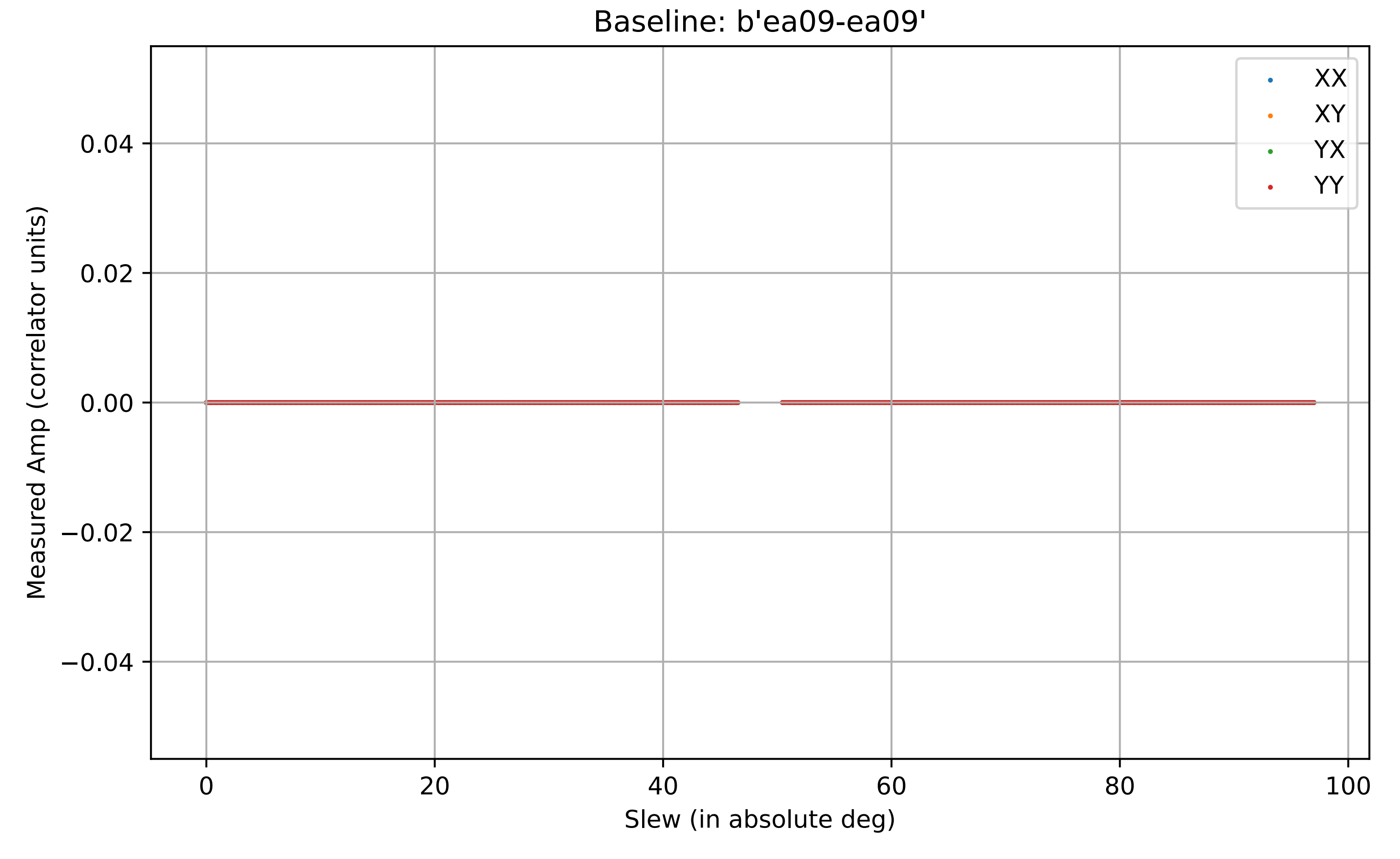


Baseline: b'ea08-ea25'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.002
0.004
0.006
0.008
0.010
0.012
0.014
0
20
40
60
80
100

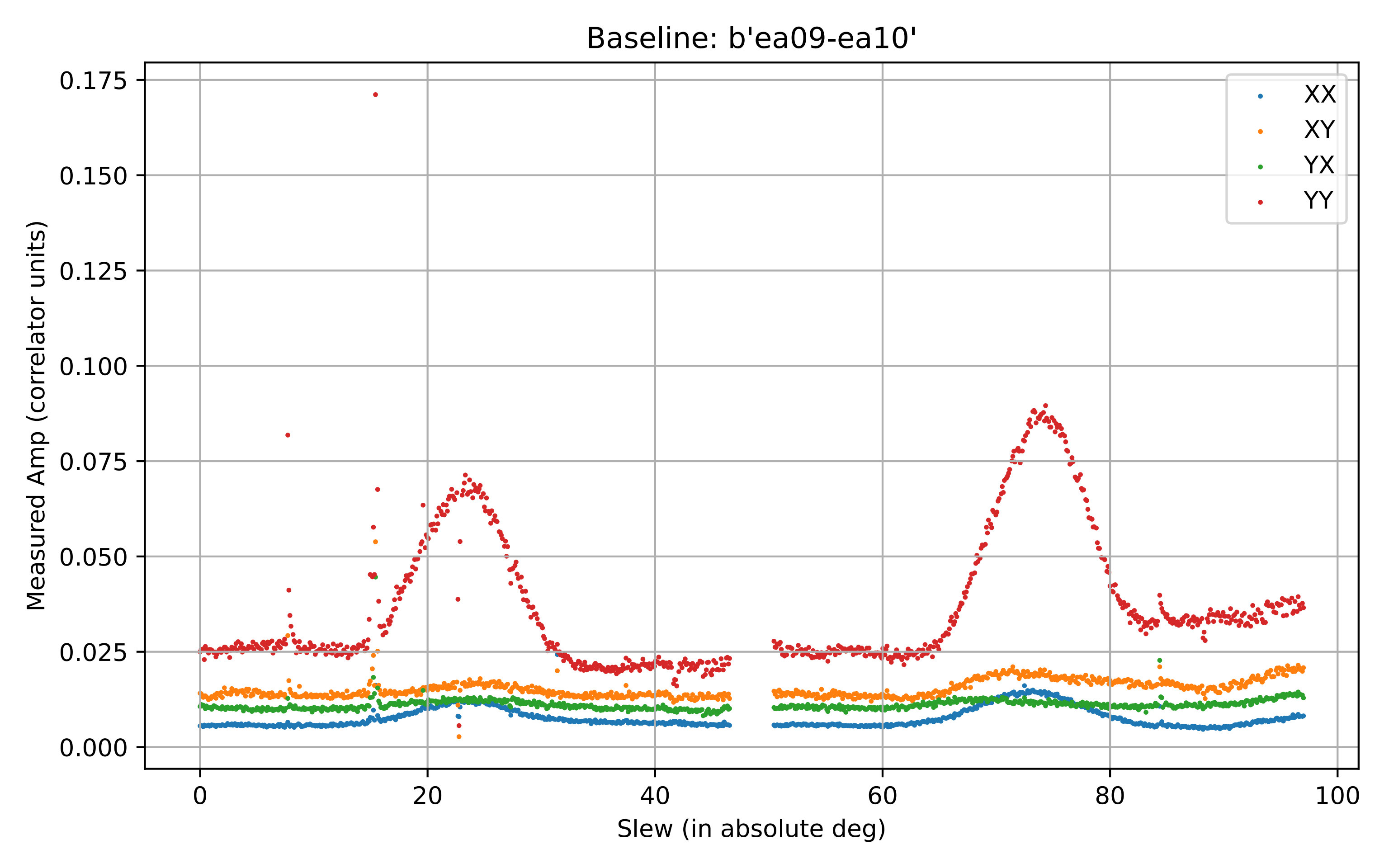

Baseline: b'ea08-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100

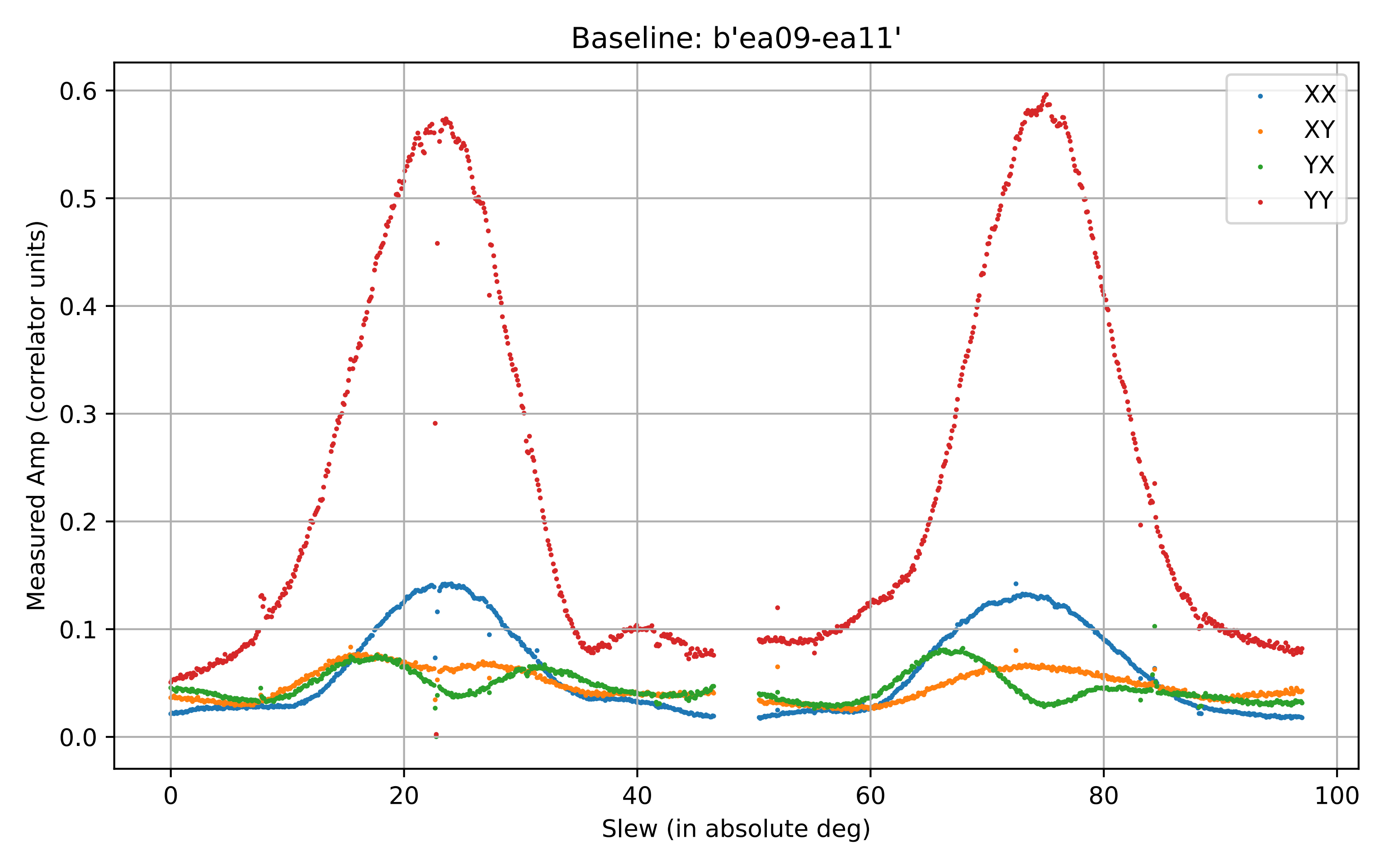

Baseline: b'ea08-ea27'
Measured Amp (correlator units)
0.0025
0.0020
0.0015
0.0010
0.0005
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY


Baseline: b'ea08-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100

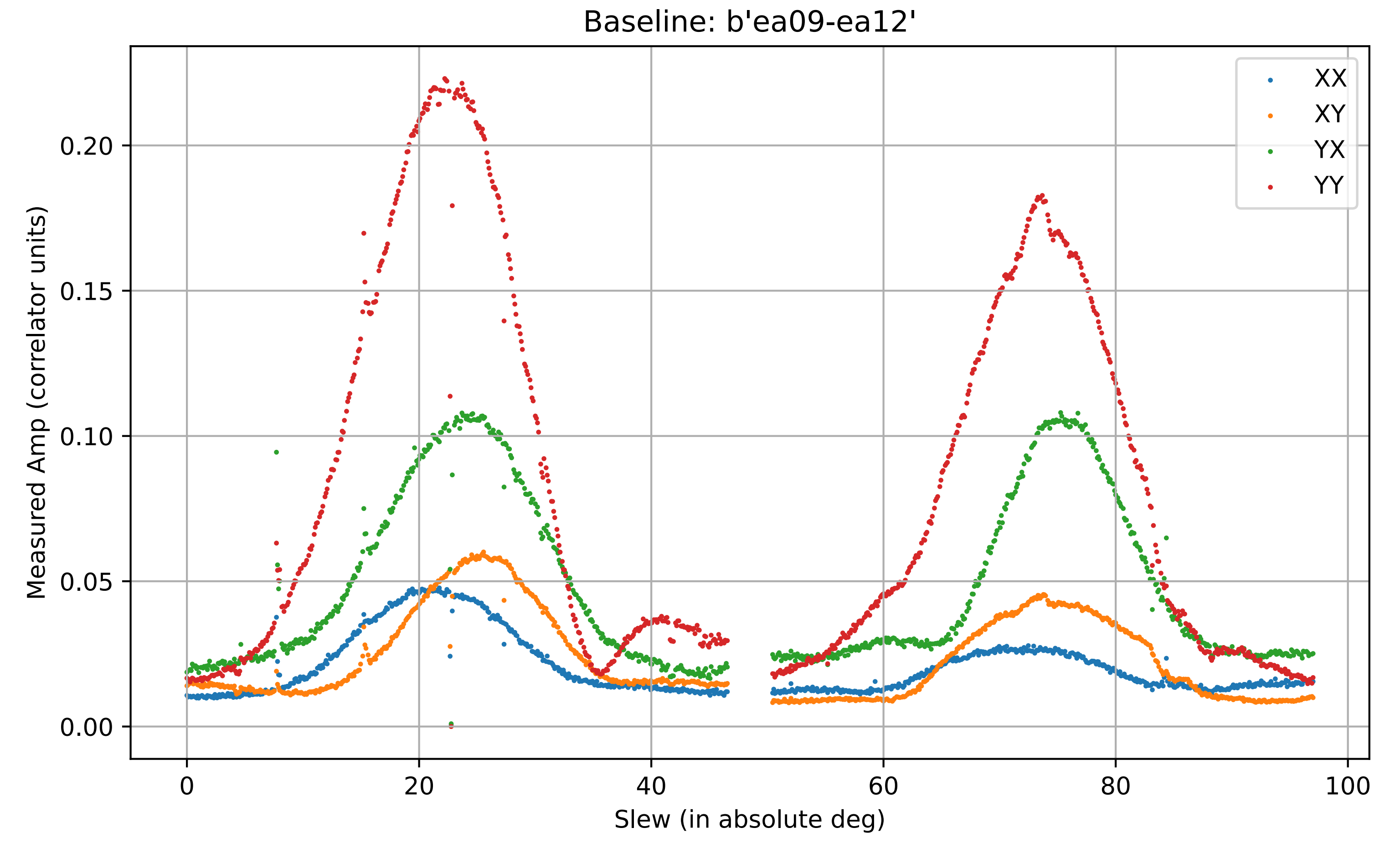


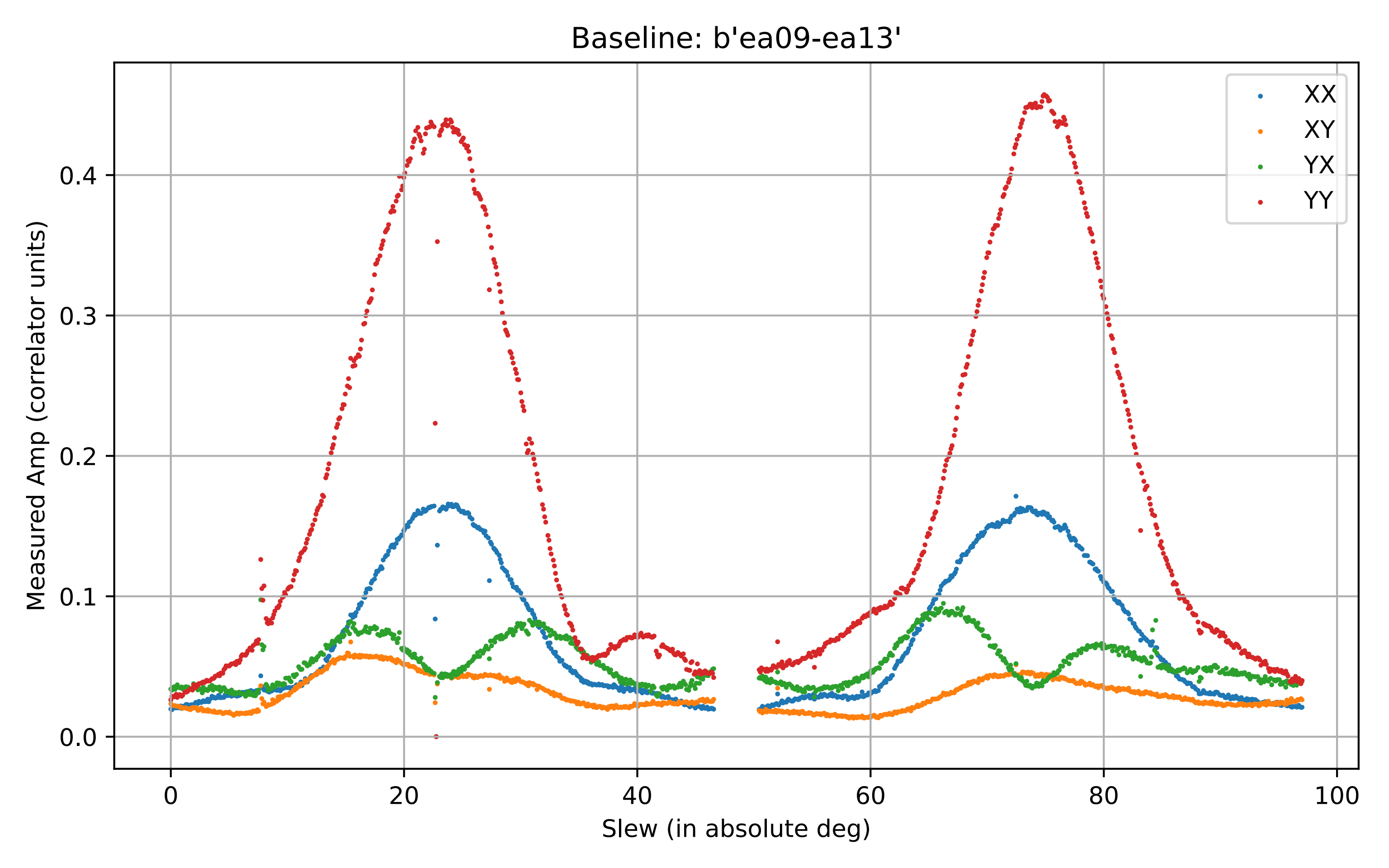
Baseline: b'ea09-ea09'
XX
XY
YX
YY
0.04
0.02
0.00
−0.02
−0.04
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

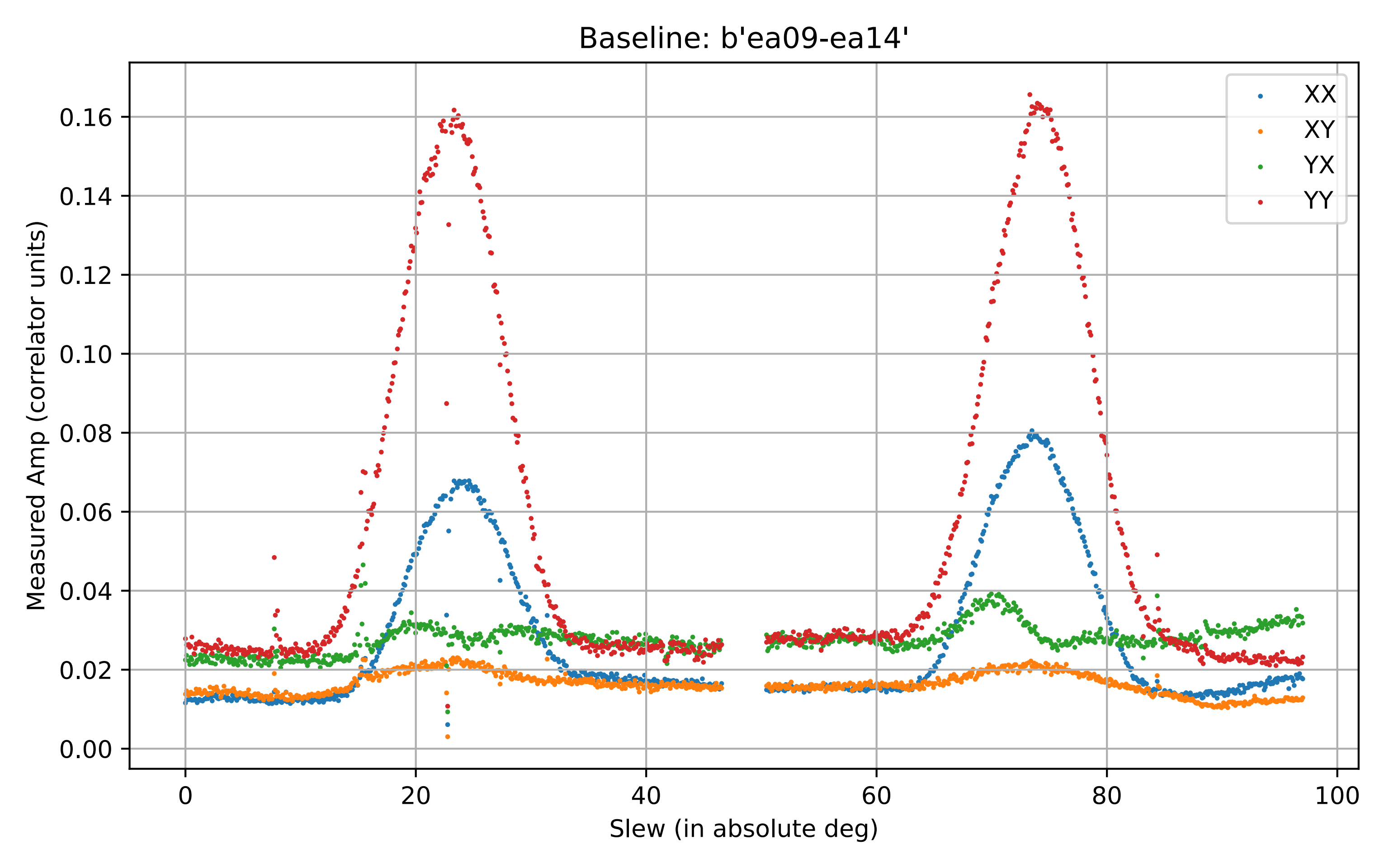

Baseline: b'ea09-ea10'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100



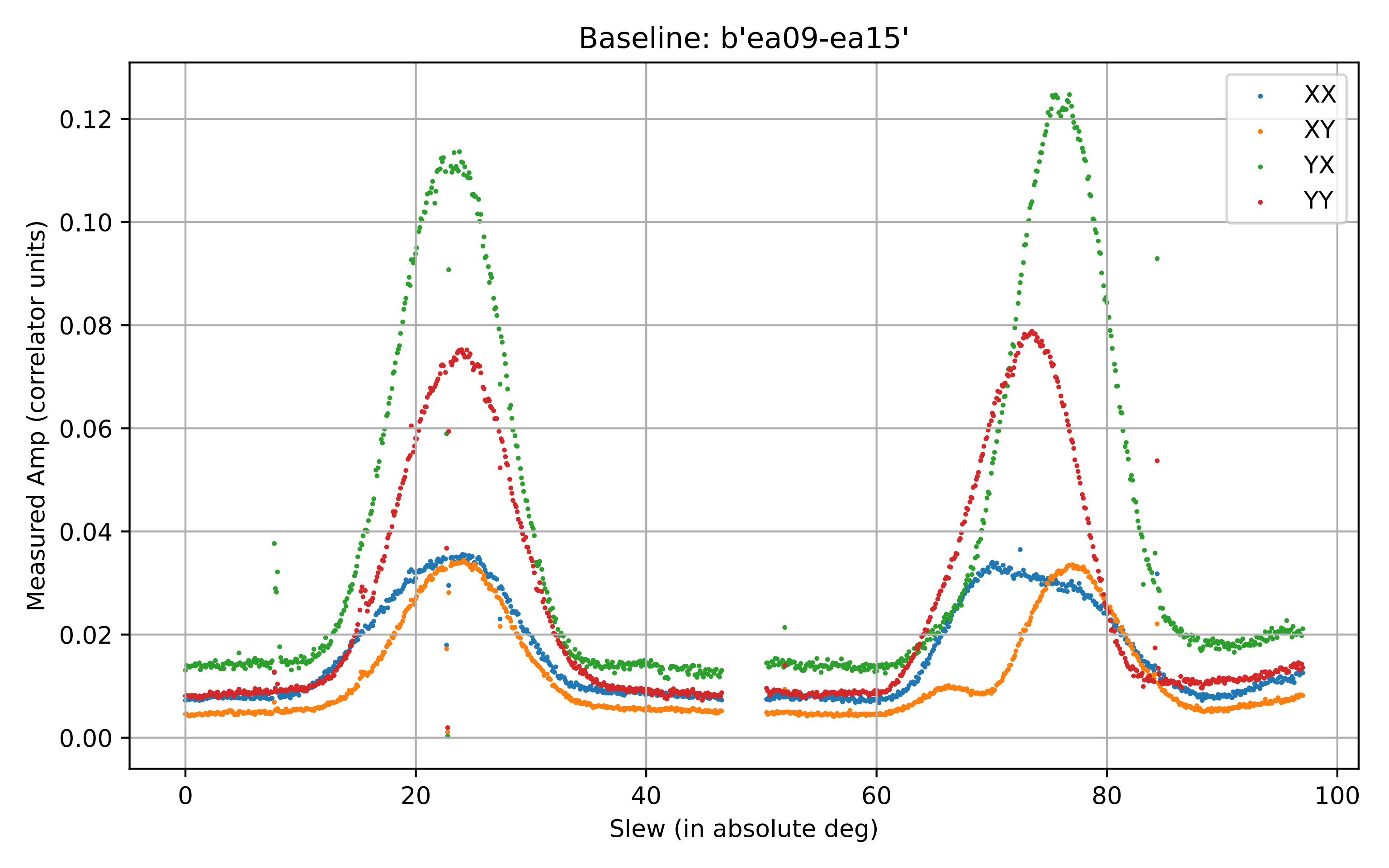
Baseline: b'ea09-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
20
40
60
80
100


Baseline: b'ea09-ea12'
XX
XY
YX
YY
Measured Amp (correlator units)
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100
Slew (in absolute deg)

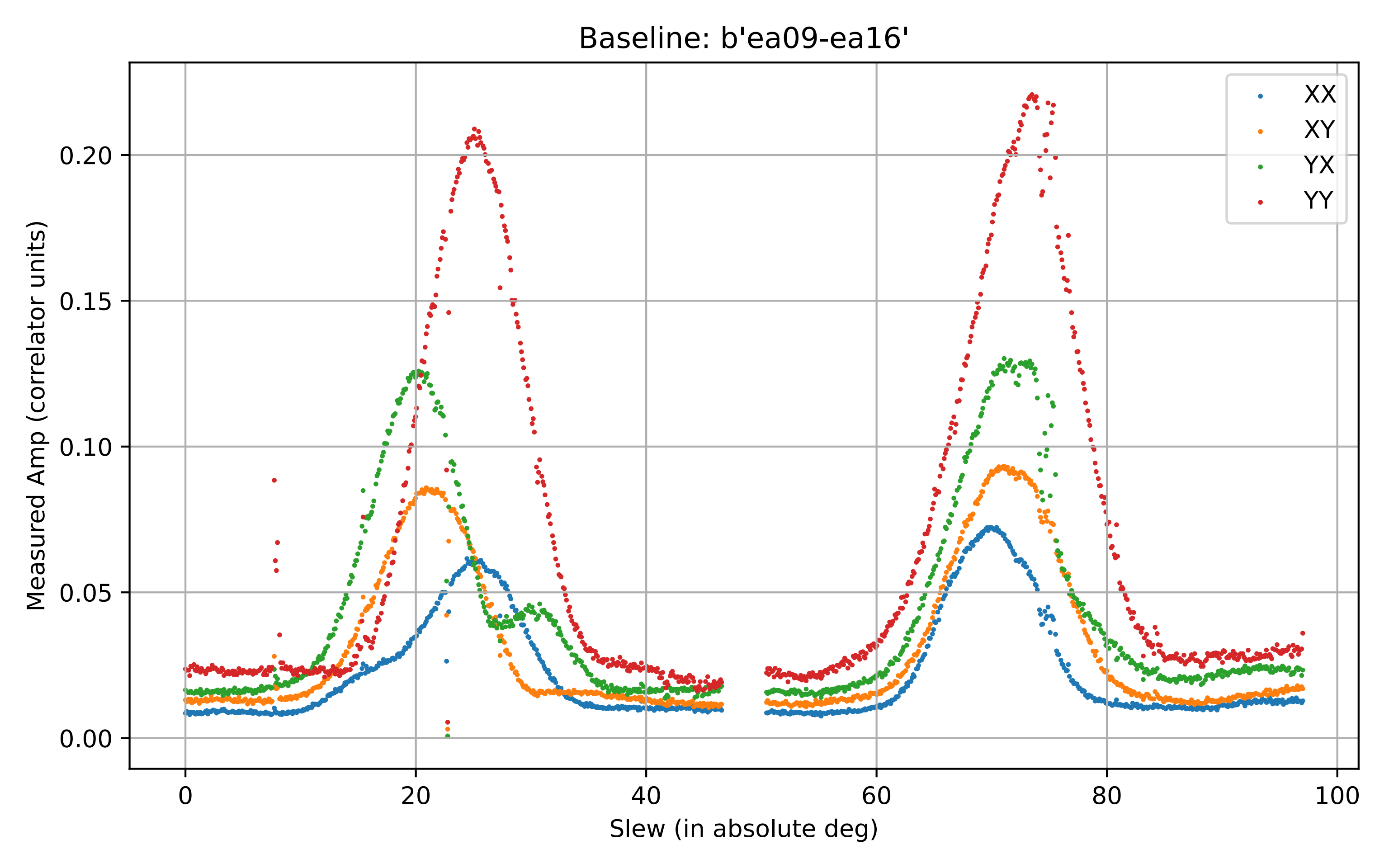

Baseline: b'ea09-ea13'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100
Slew (in absolute deg)

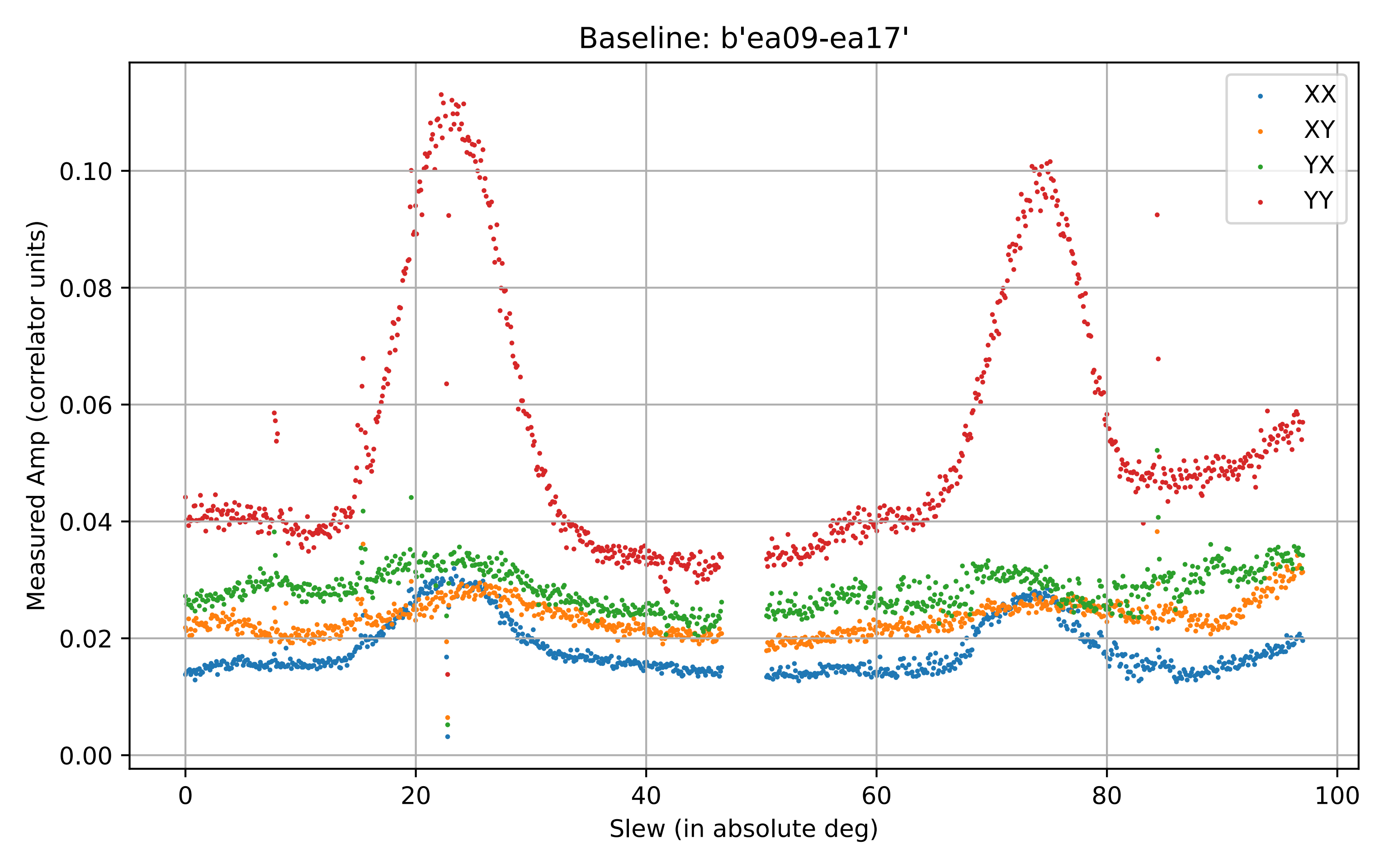


Baseline: b'ea09-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100
Slew (in absolute deg)

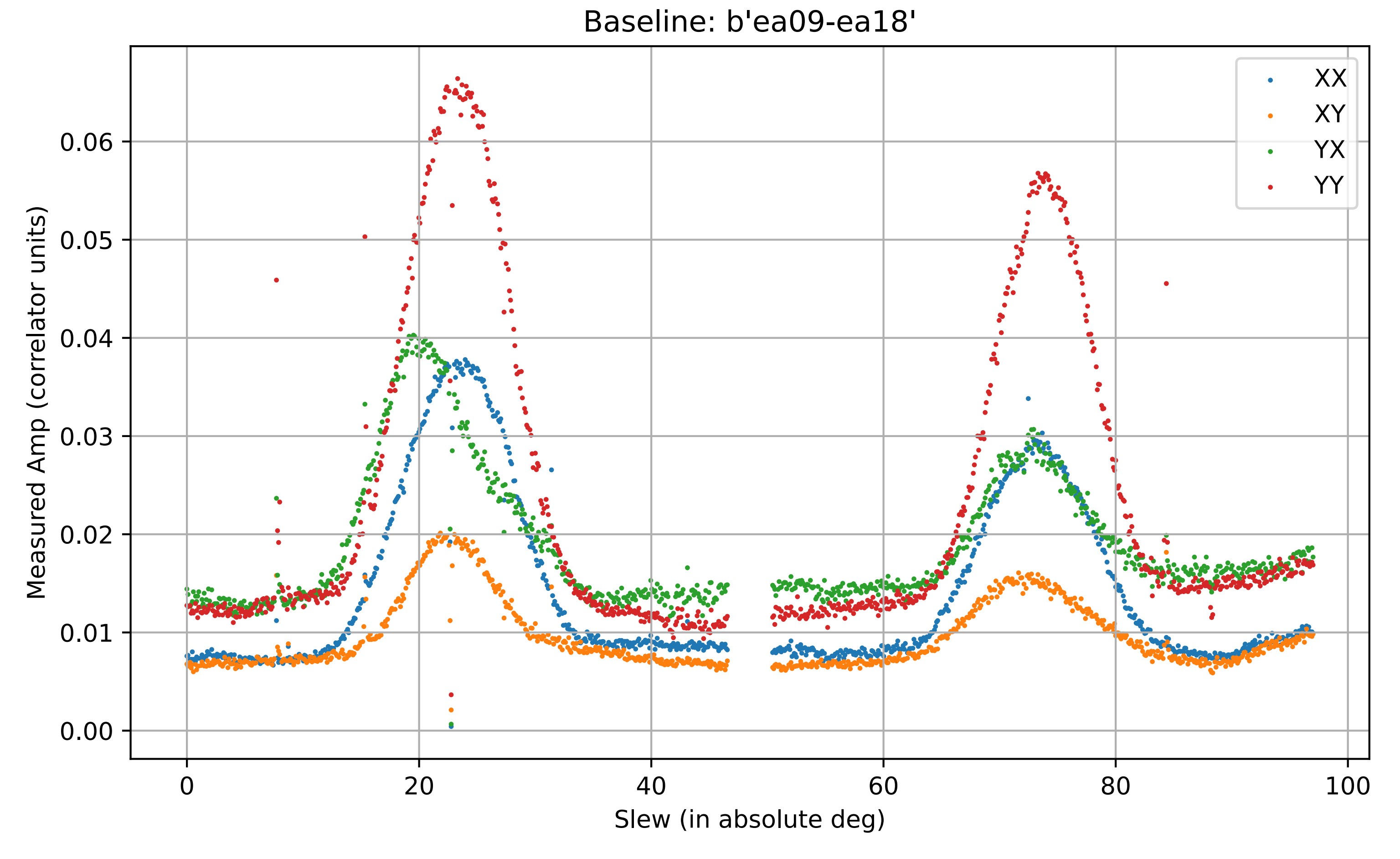


Baseline: b'ea09-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)

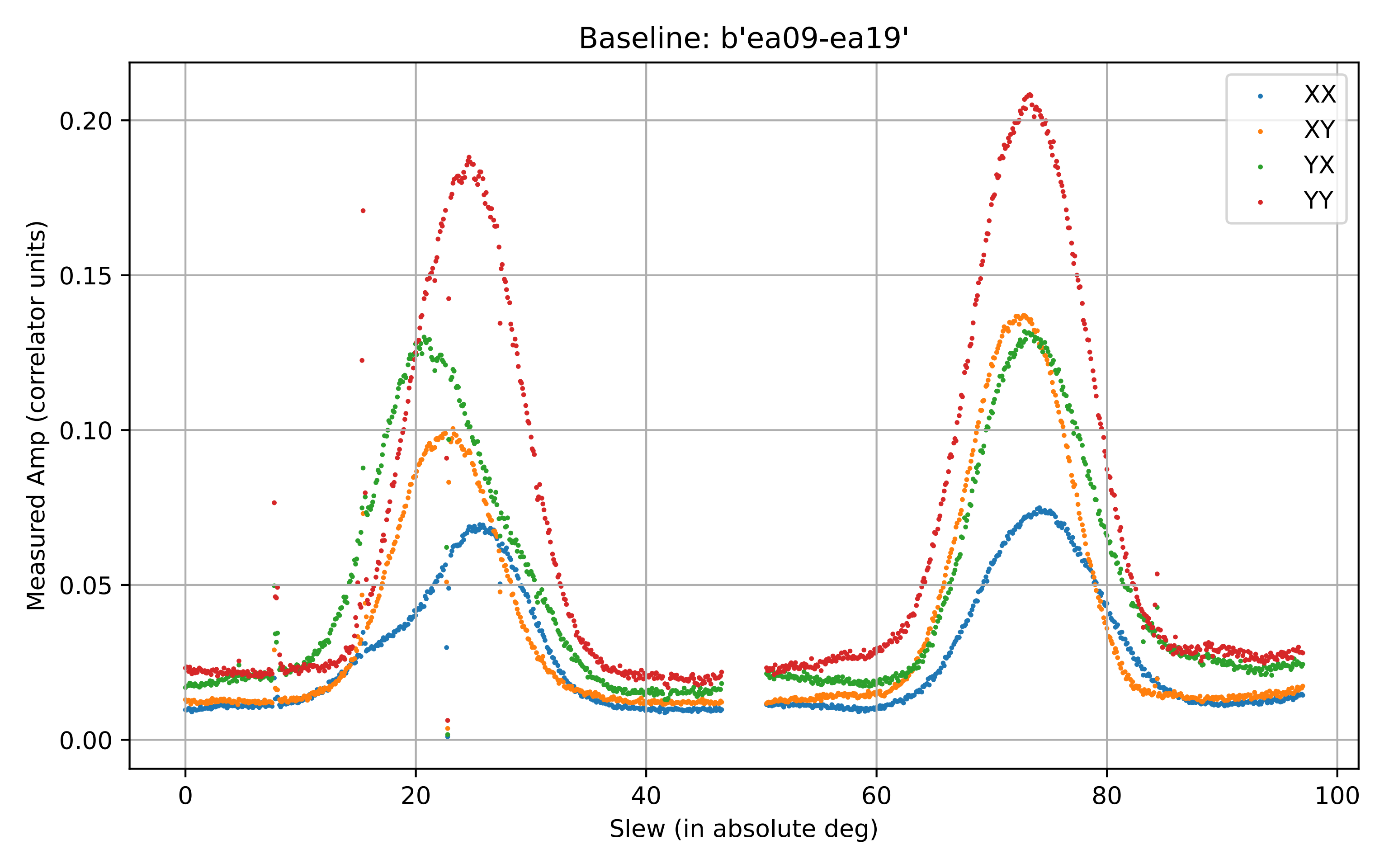

Baseline: b'ea09-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100

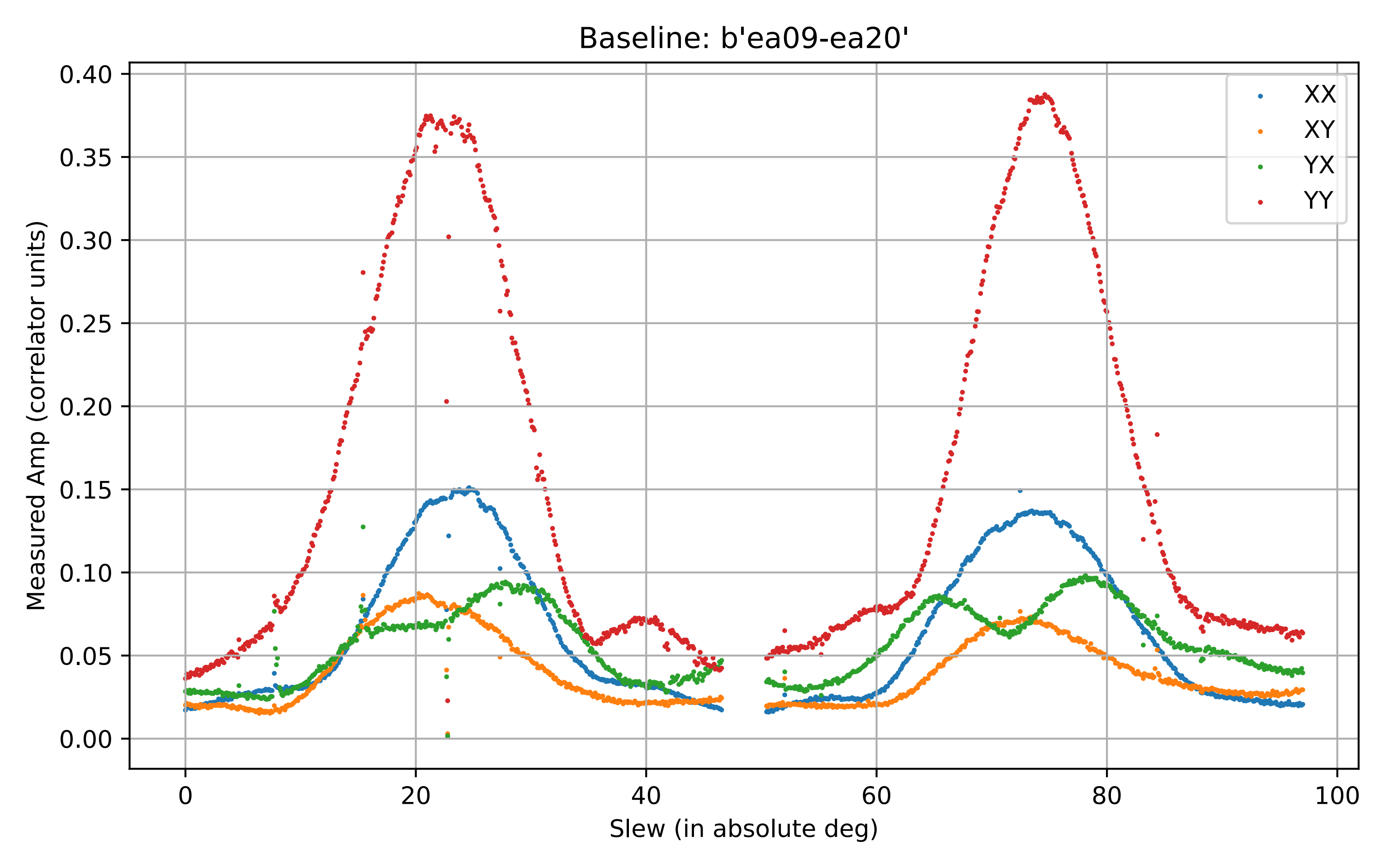


Baseline: b'ea09-ea17'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

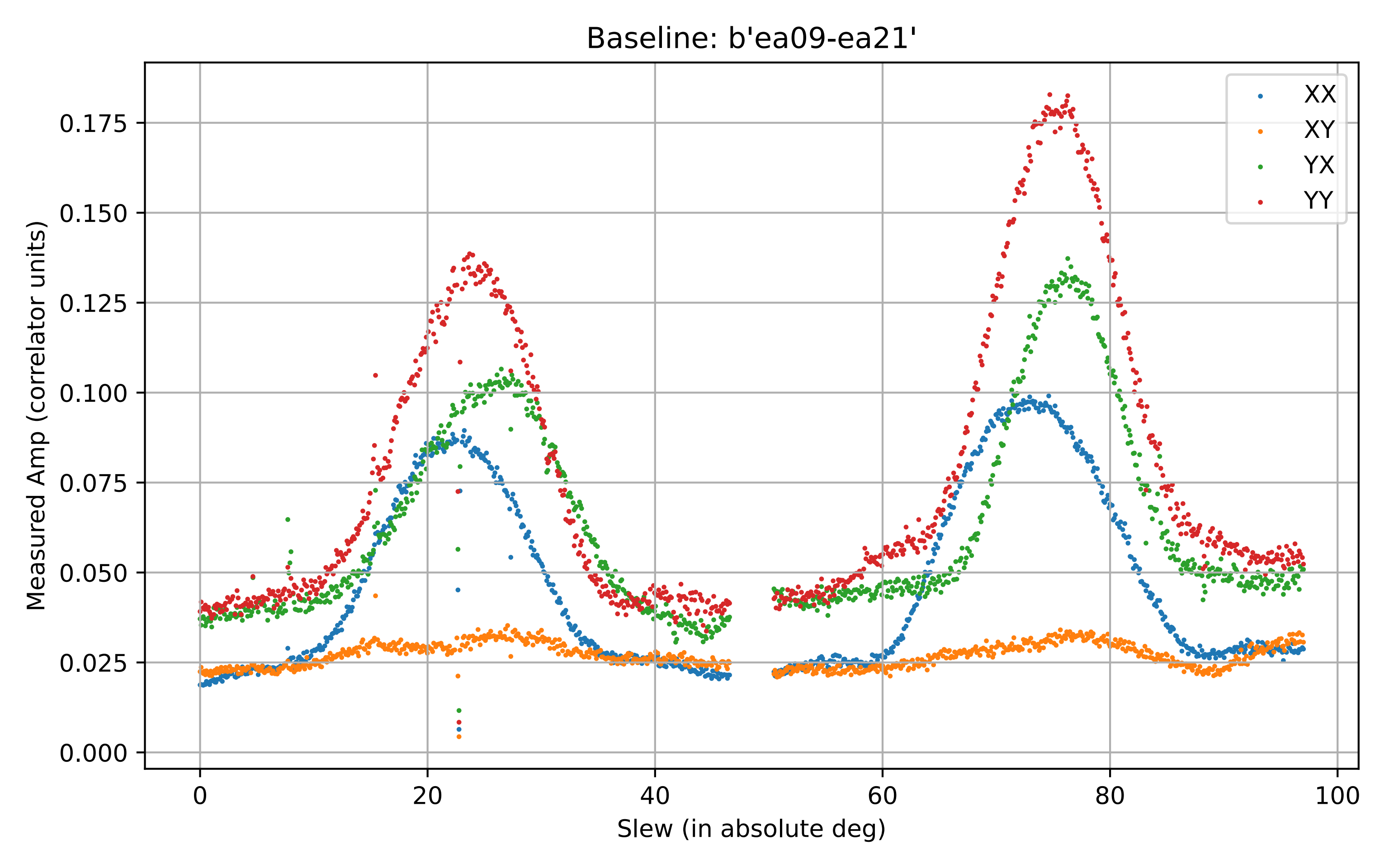


Baseline: b'ea09-ea18'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100

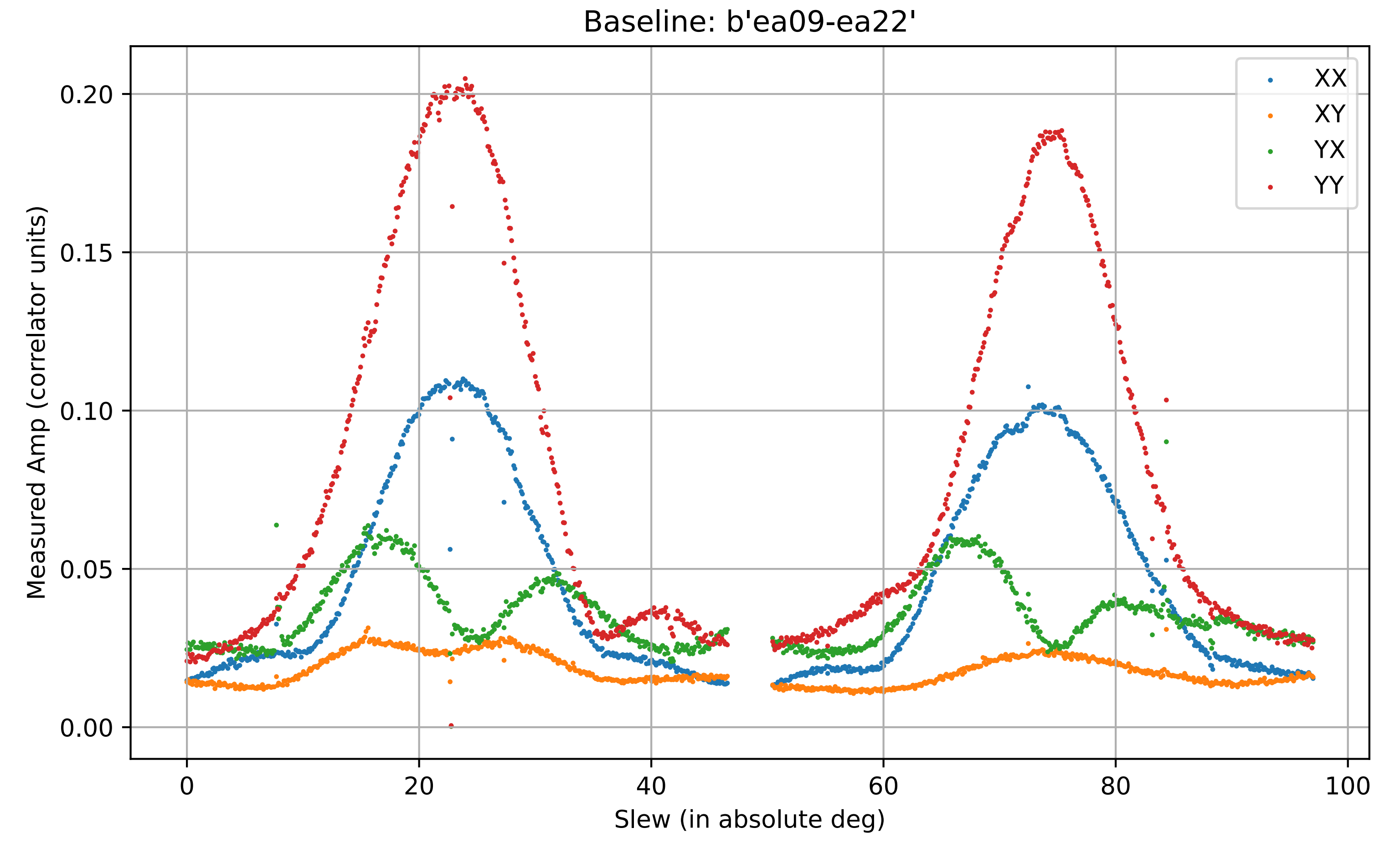

Baseline: b'ea09-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100



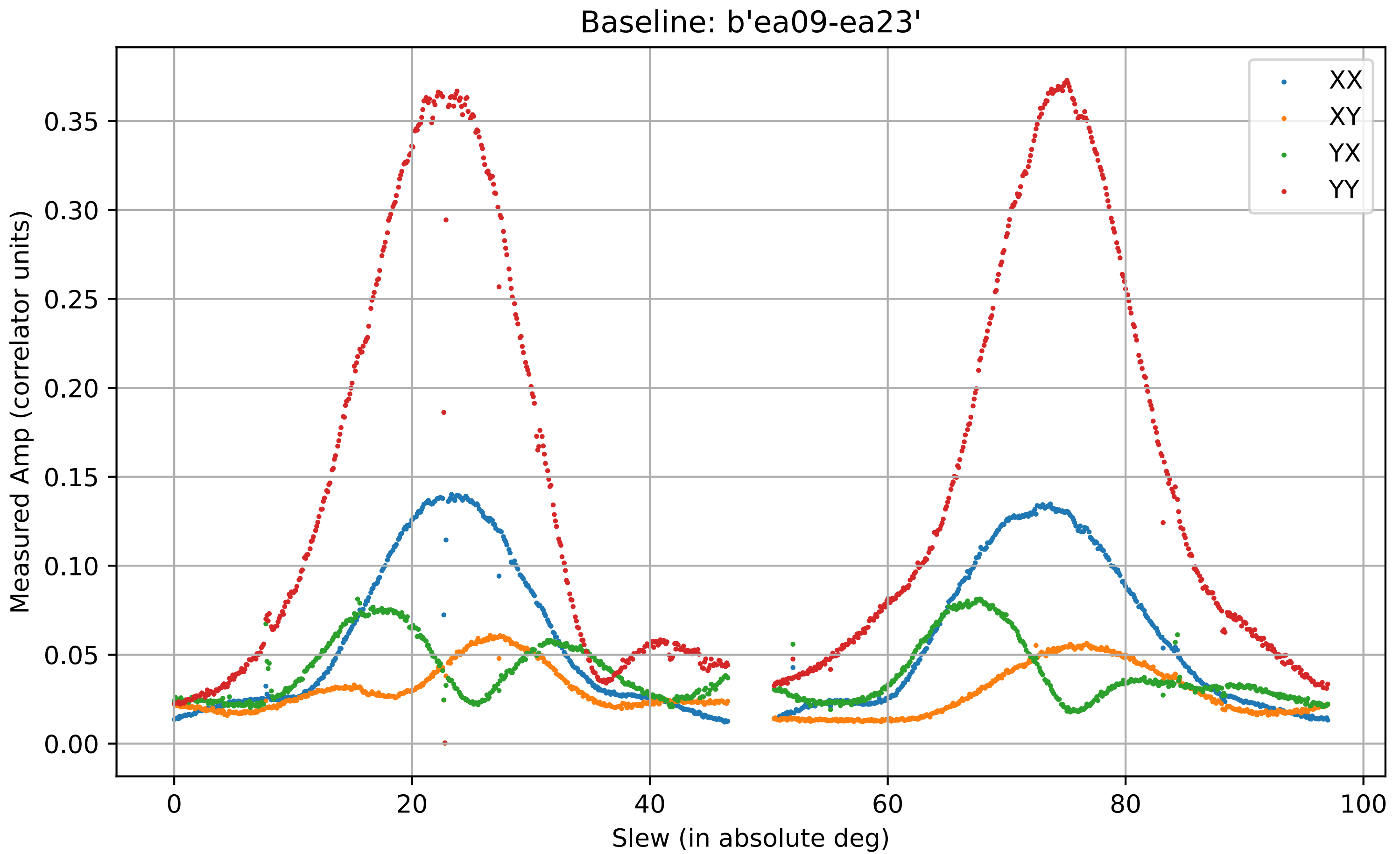
Baseline: b'ea09-ea20'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0
20
40
60
80
100



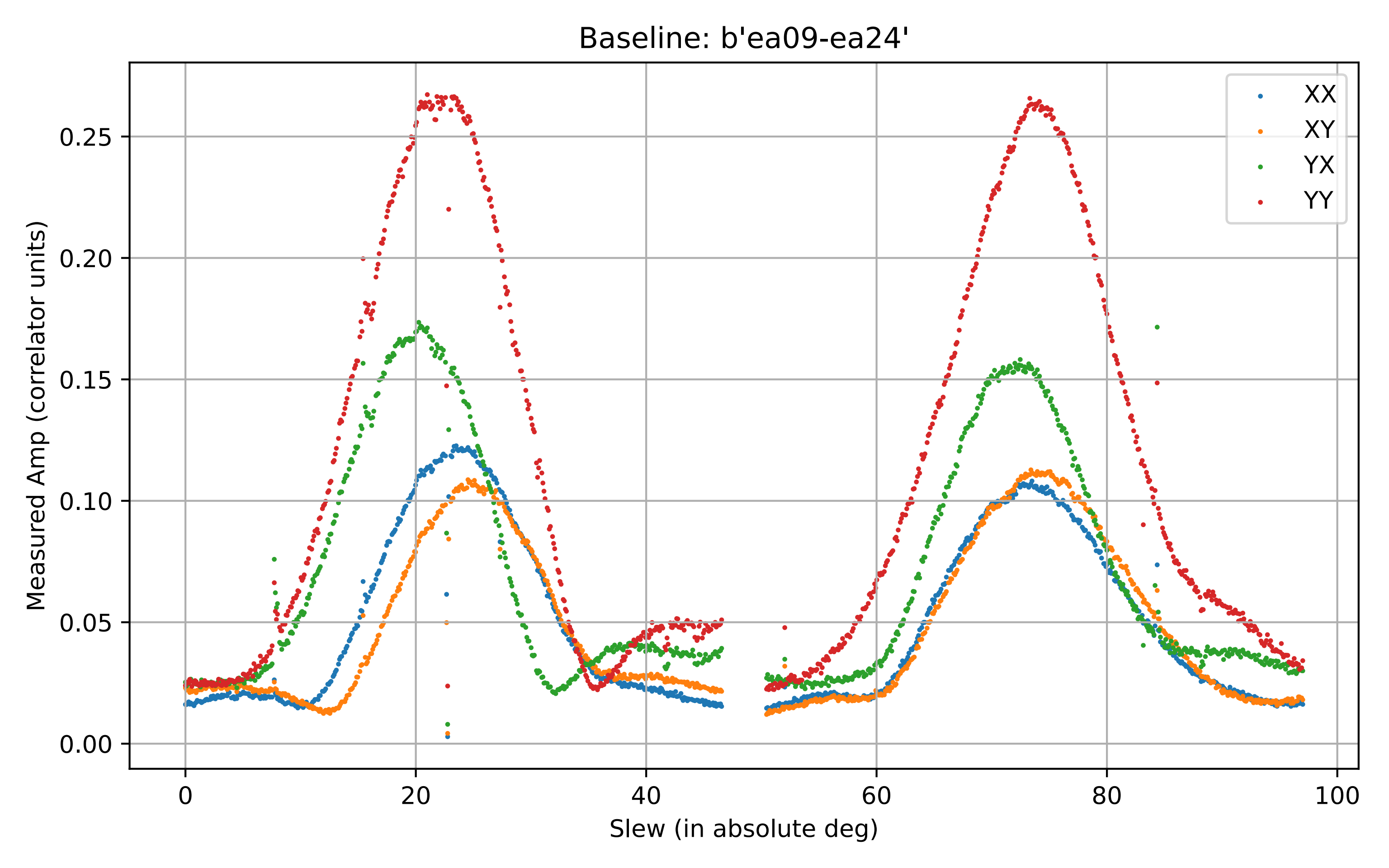
Baseline: b'ea09-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100
Slew (in absolute deg)

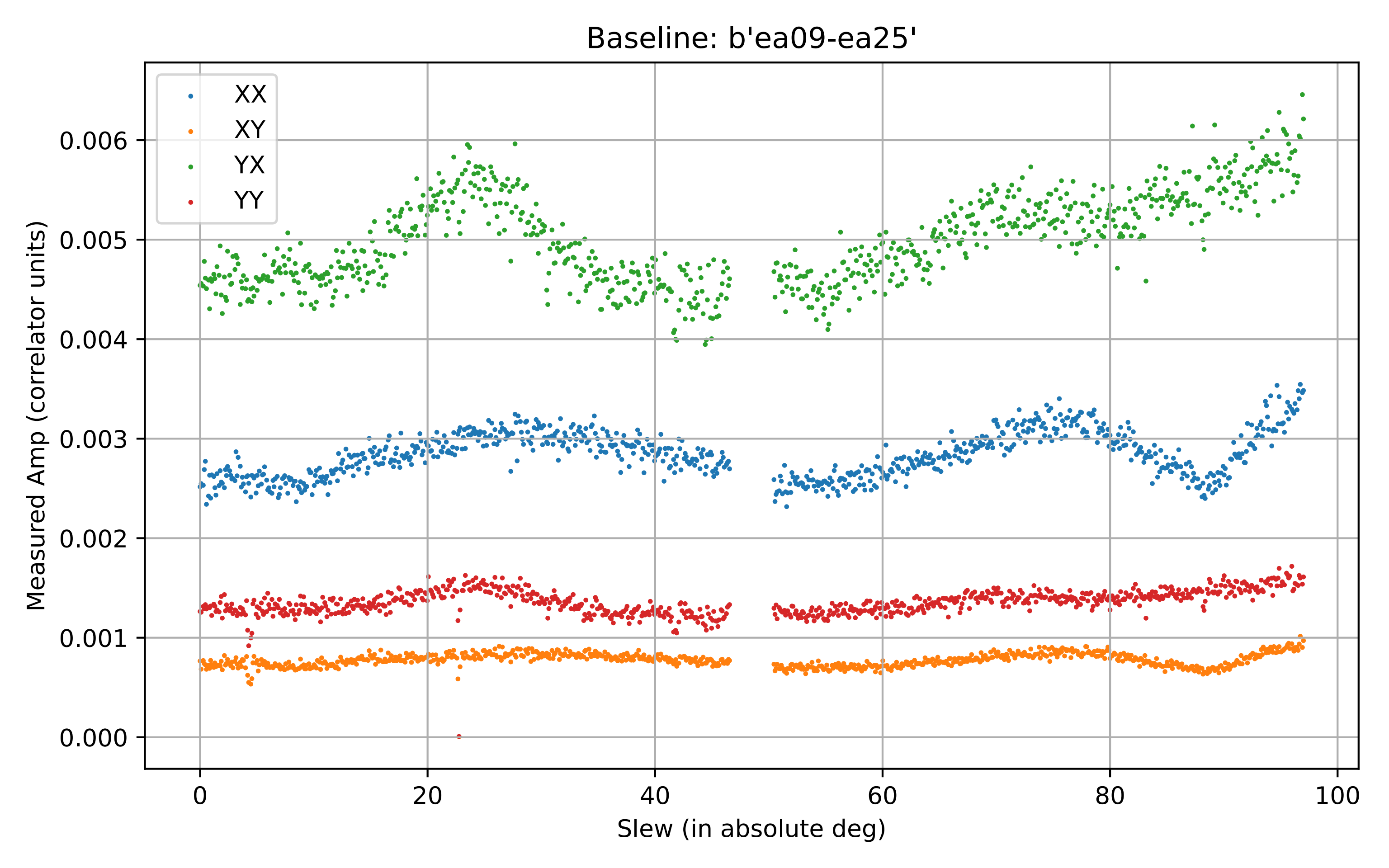


Baseline: b'ea09-ea22'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
XX
XY
YX
YY

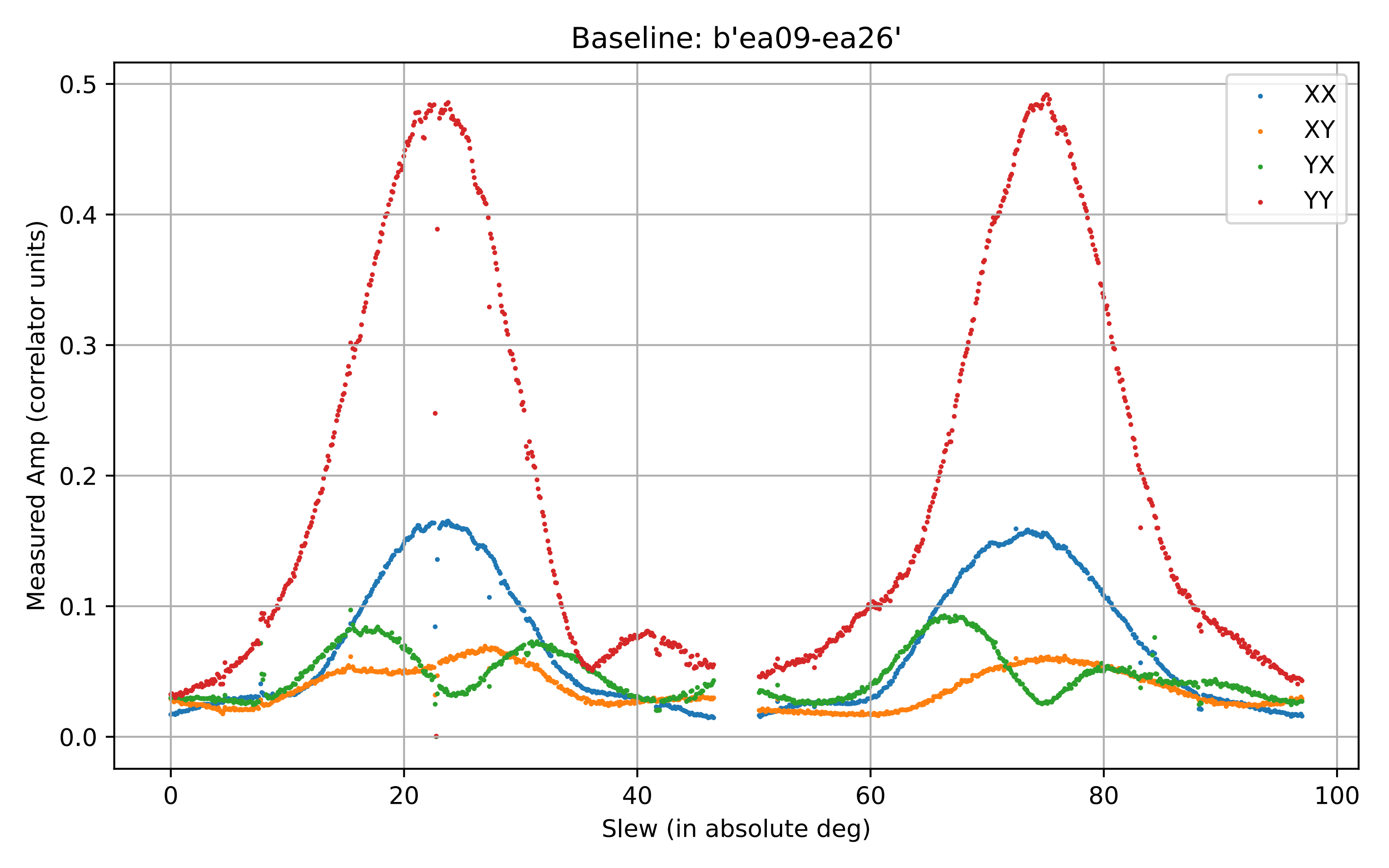


Baseline: b'ea09-ea23'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100
Slew (in absolute deg)

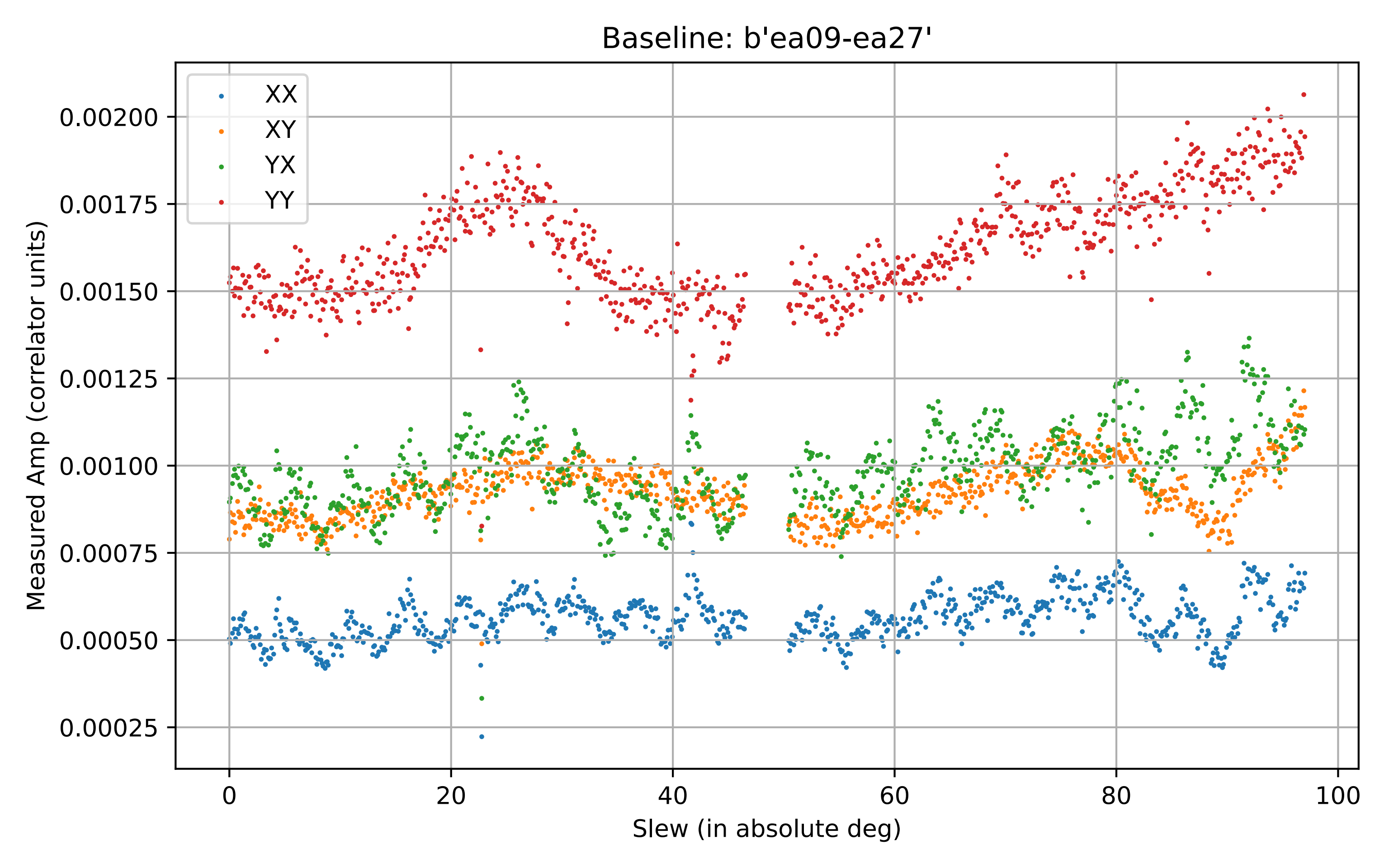

Baseline: b'ea09-ea24'
XX
XY
YX
YY
0.25
0.20
0.15
0.10
0.05
0.00
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

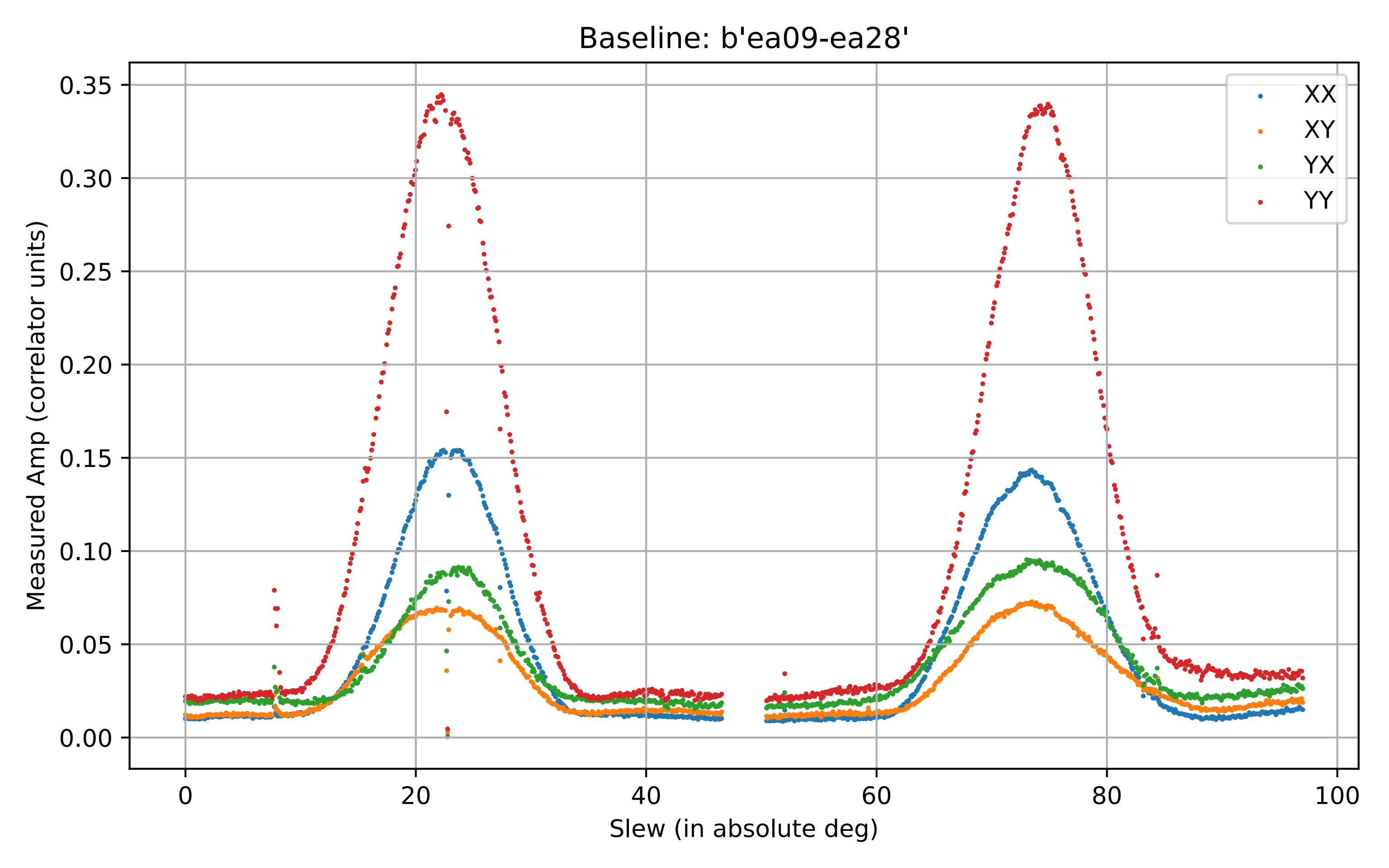


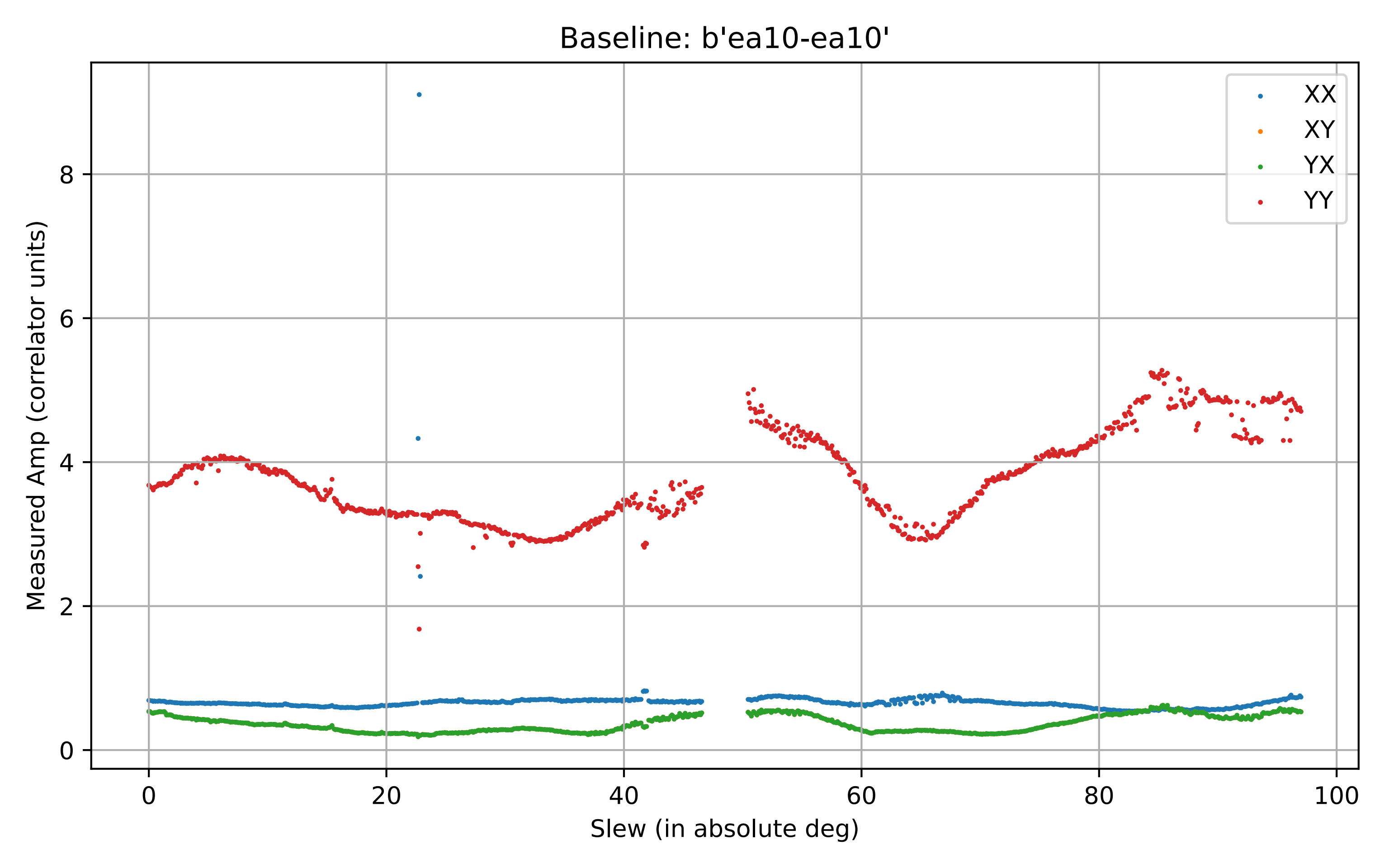
Baseline: b'ea09-ea25'
XX
XY
YX
YY
0.006
0.005
0.004
0.003
0.002
0.001
0.000
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

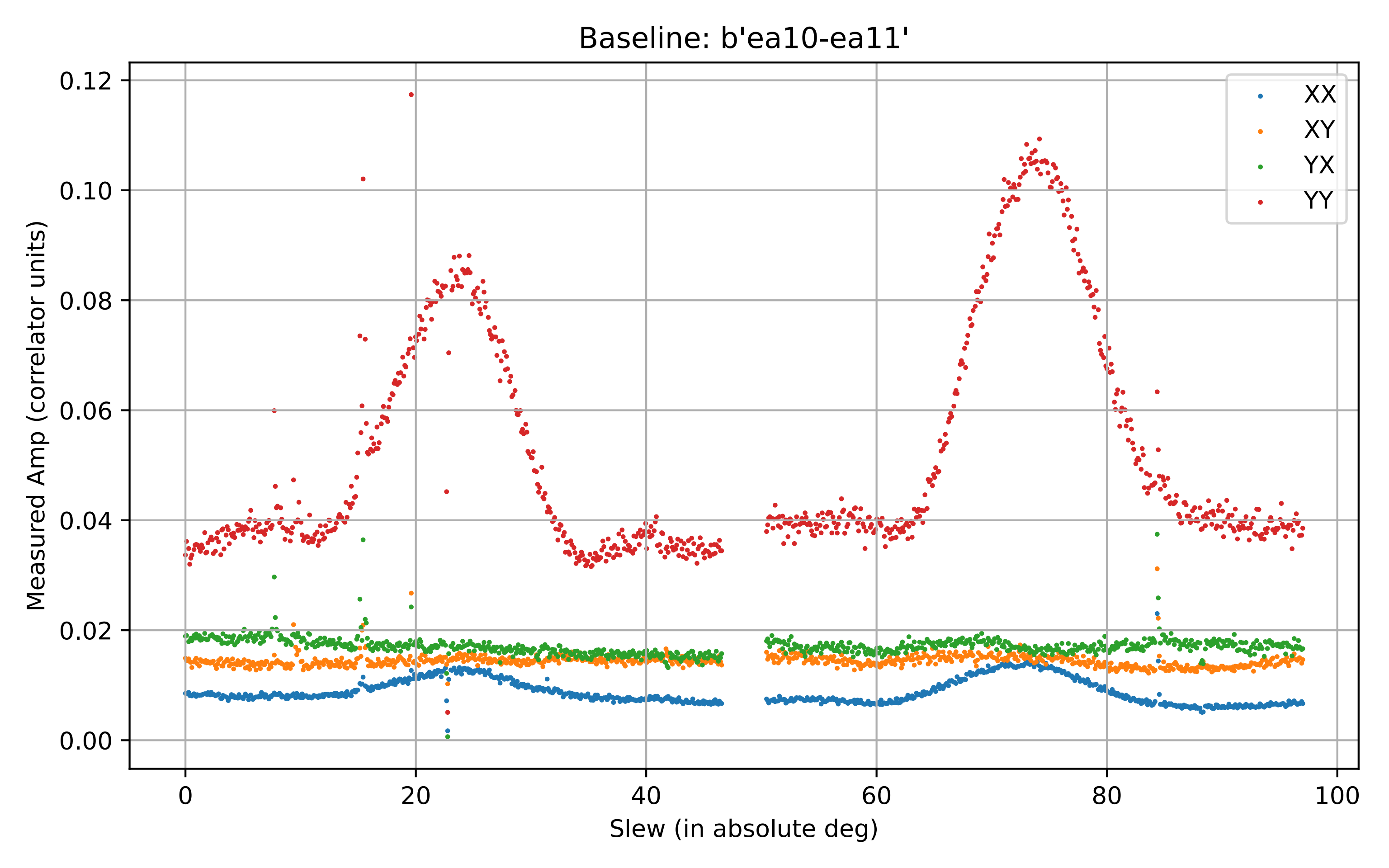


Baseline: b'ea09-ea26'
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

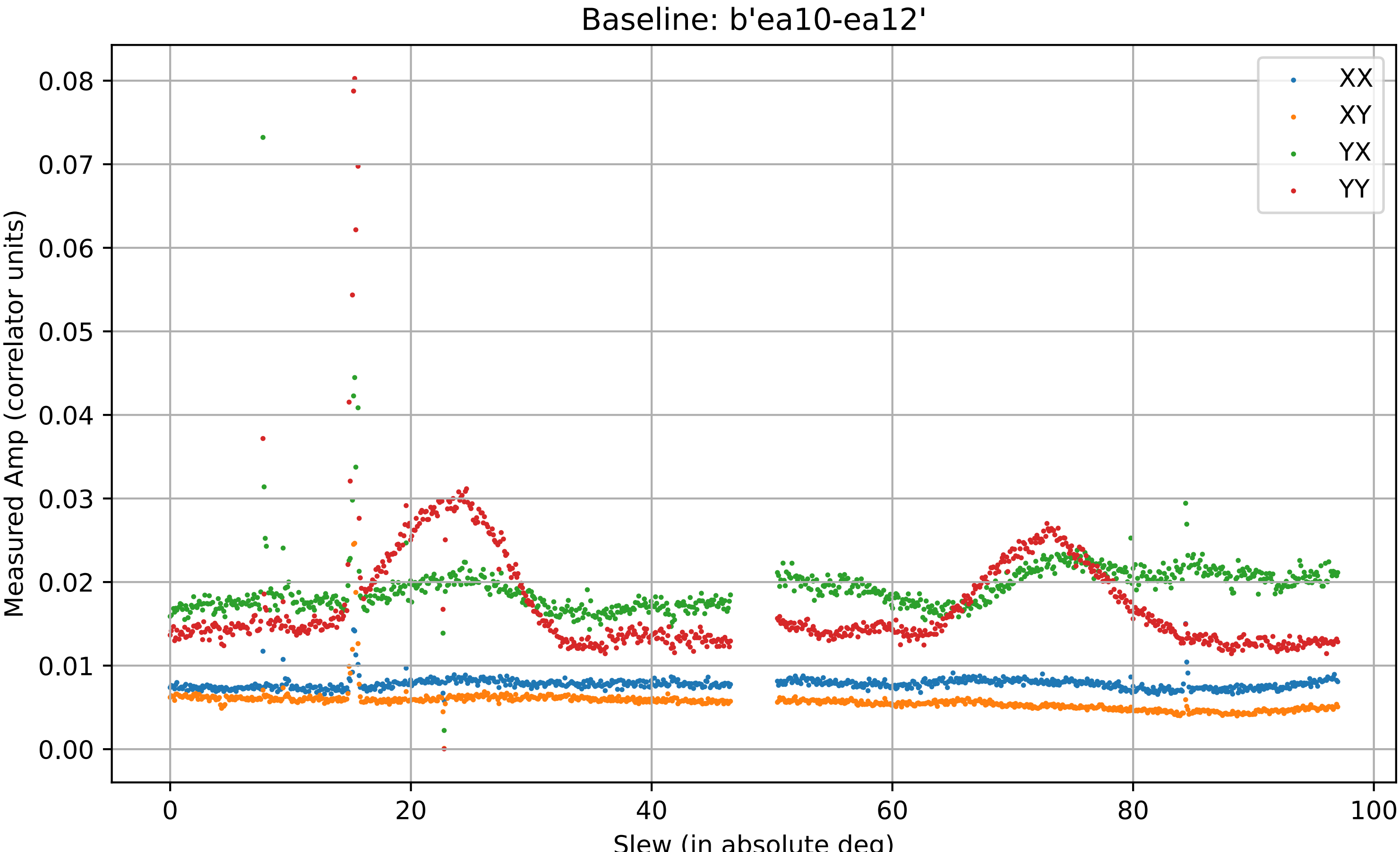

Baseline: b'ea09-ea27'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00200
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0
20
40
60
80
100
Slew (in absolute deg)

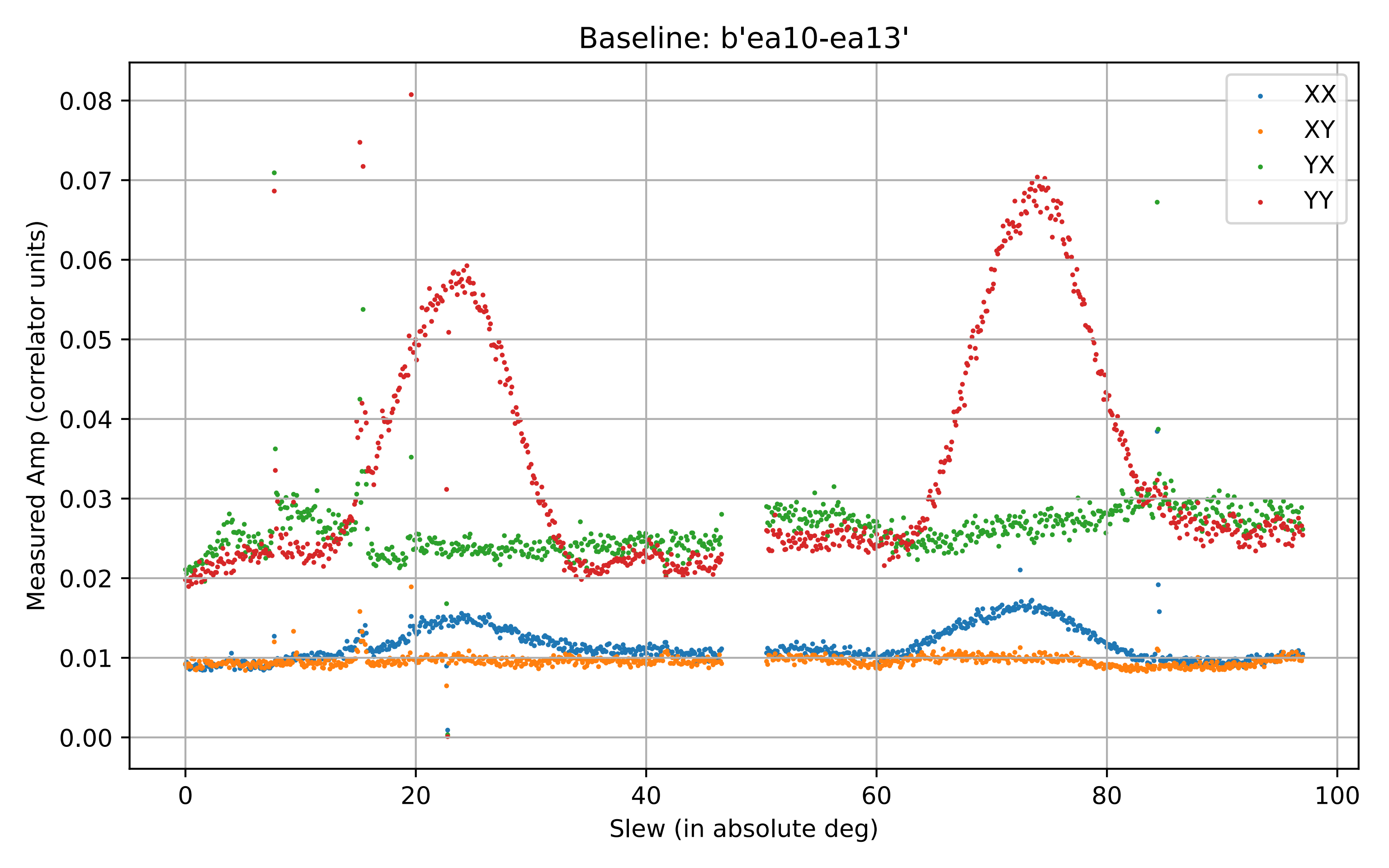

Baseline: b'ea09-ea28'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100
Slew (in absolute deg)

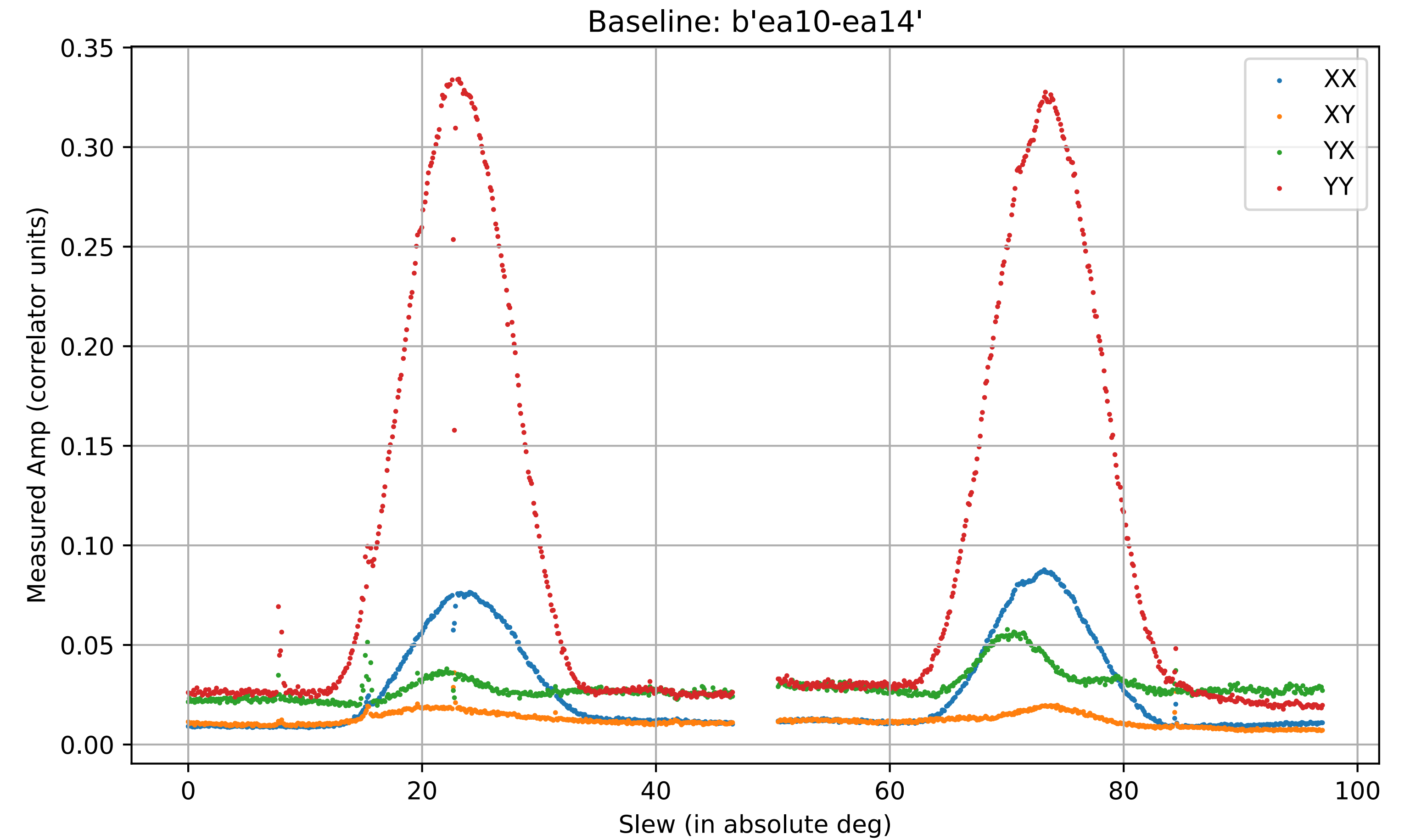

Baseline: b'ea10-ea10'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0
2
4
6
8
0
20
40
60
80
100



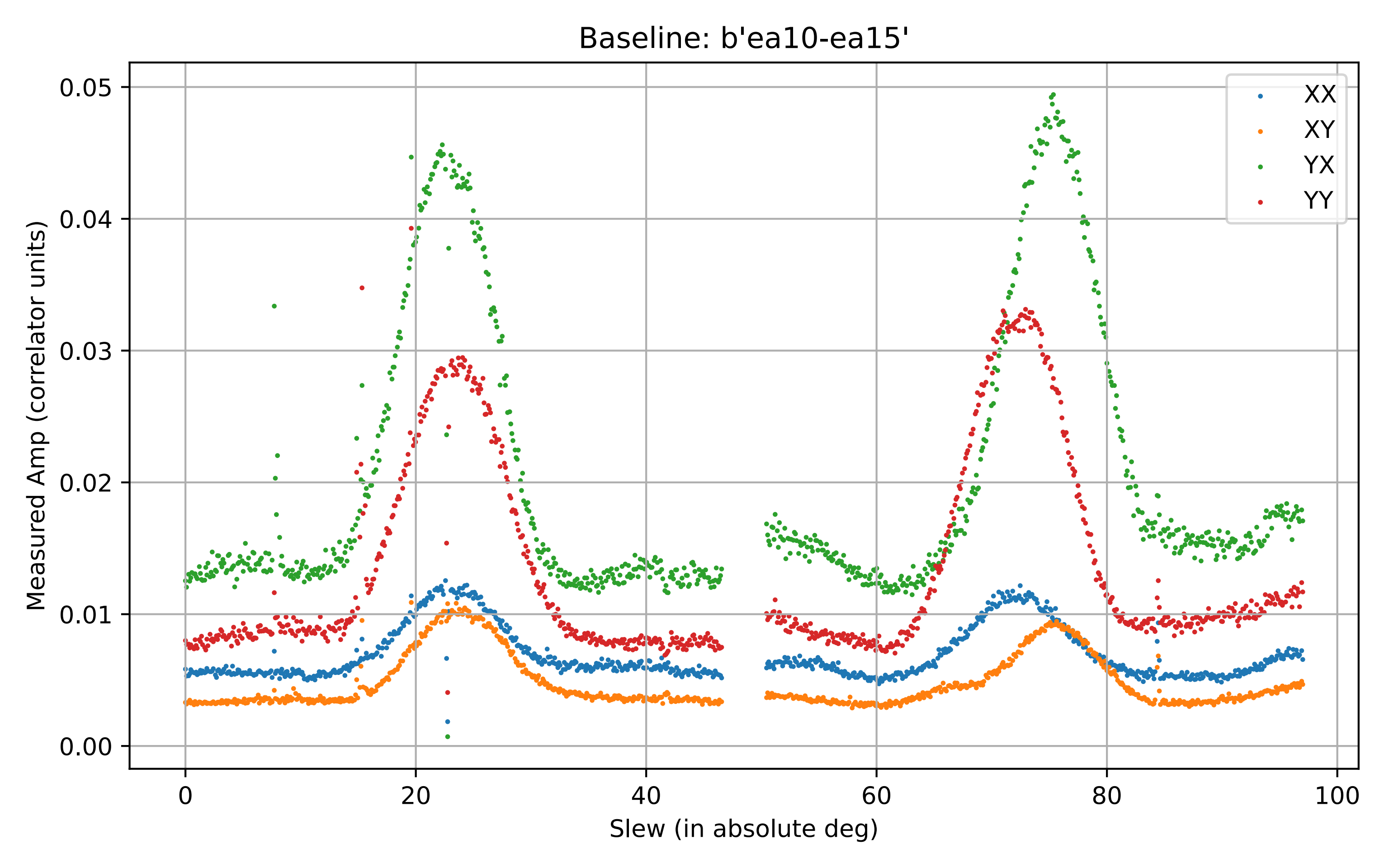
Baseline: b'ea10-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100

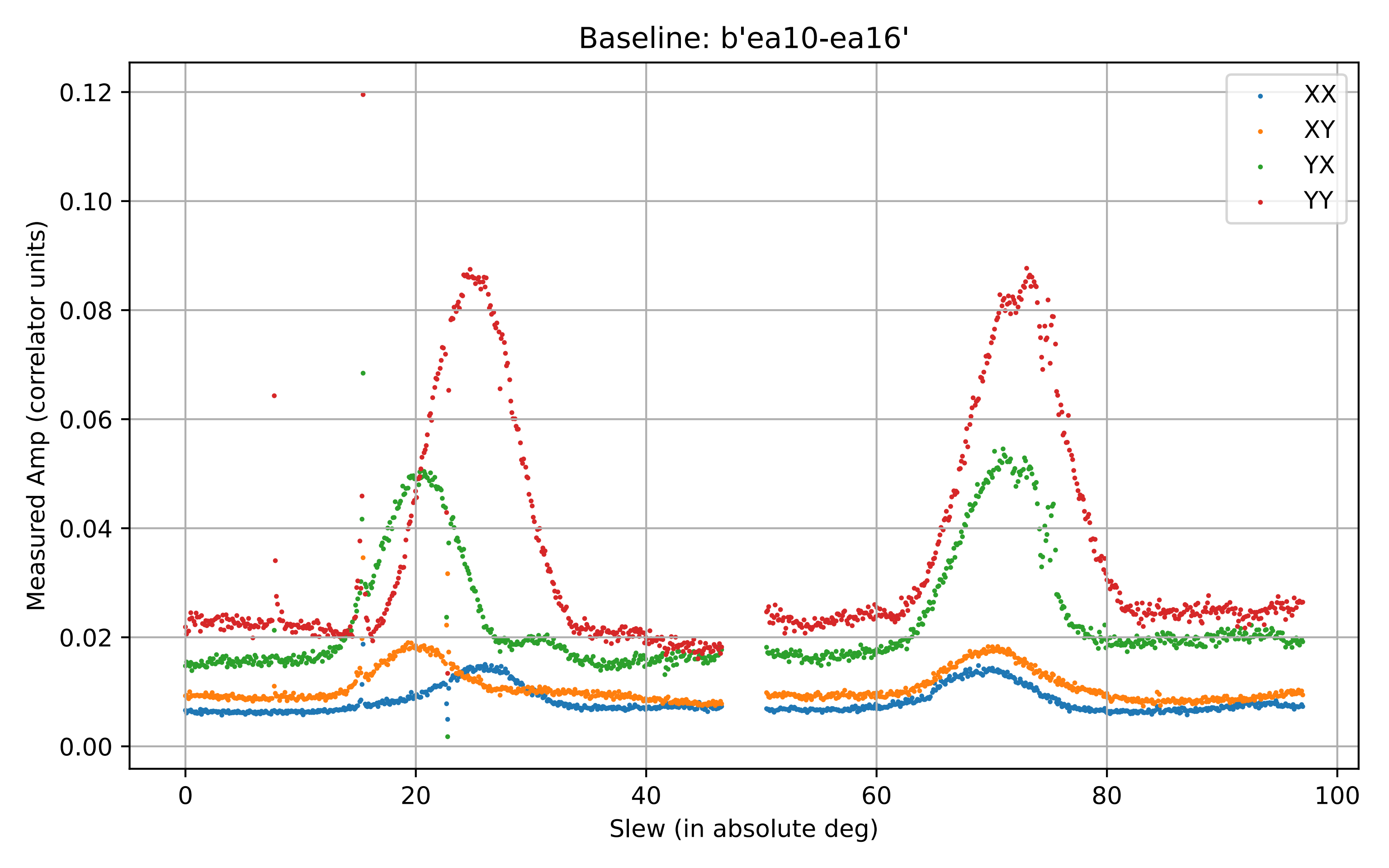

Baseline: b'ea10-ea12'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0
20
40
60
80
100

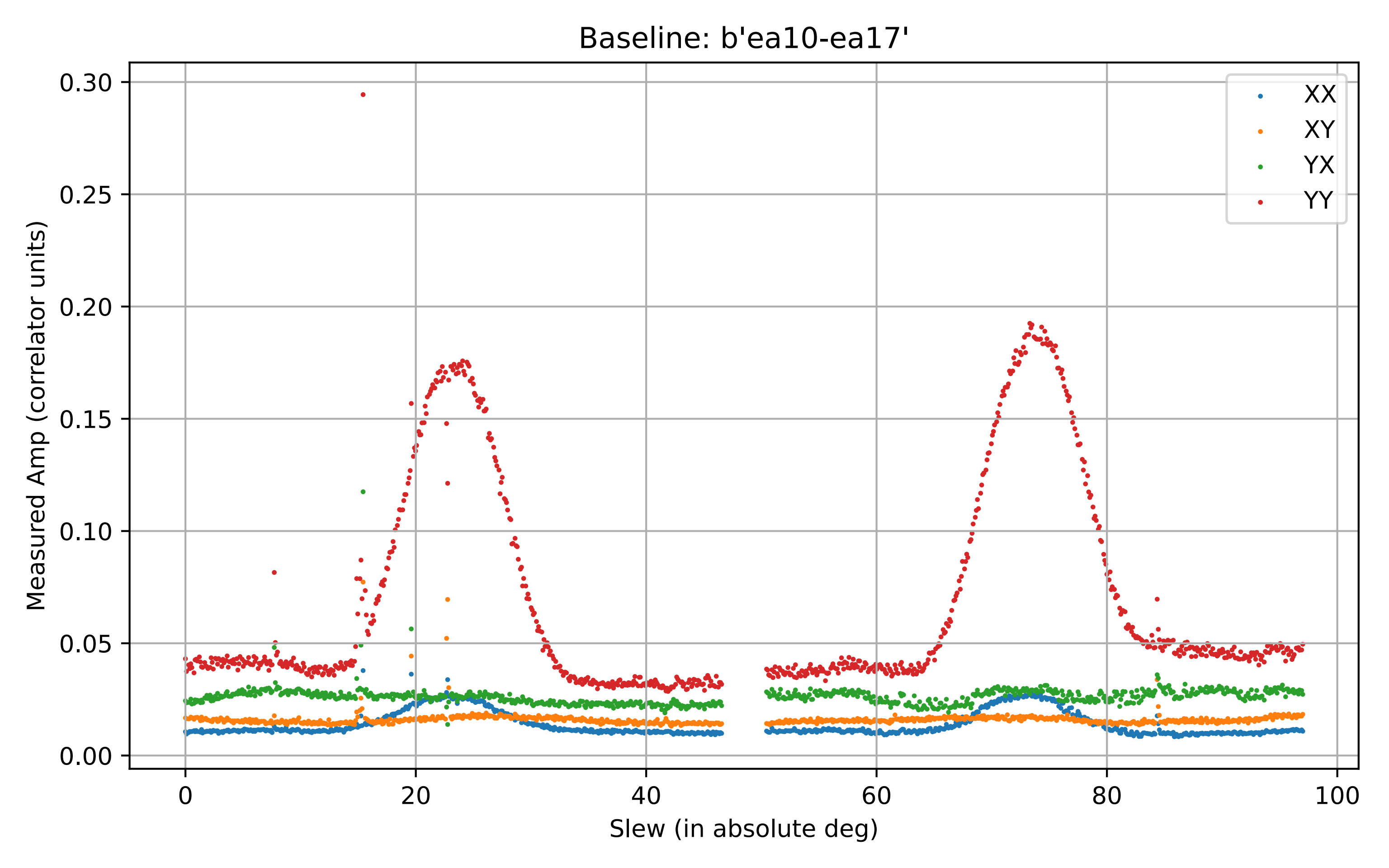

Baseline: b'ea10-ea13'
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
Slew (in absolute deg)
0
20
40
60
80
100
XX
XY
YX
YY



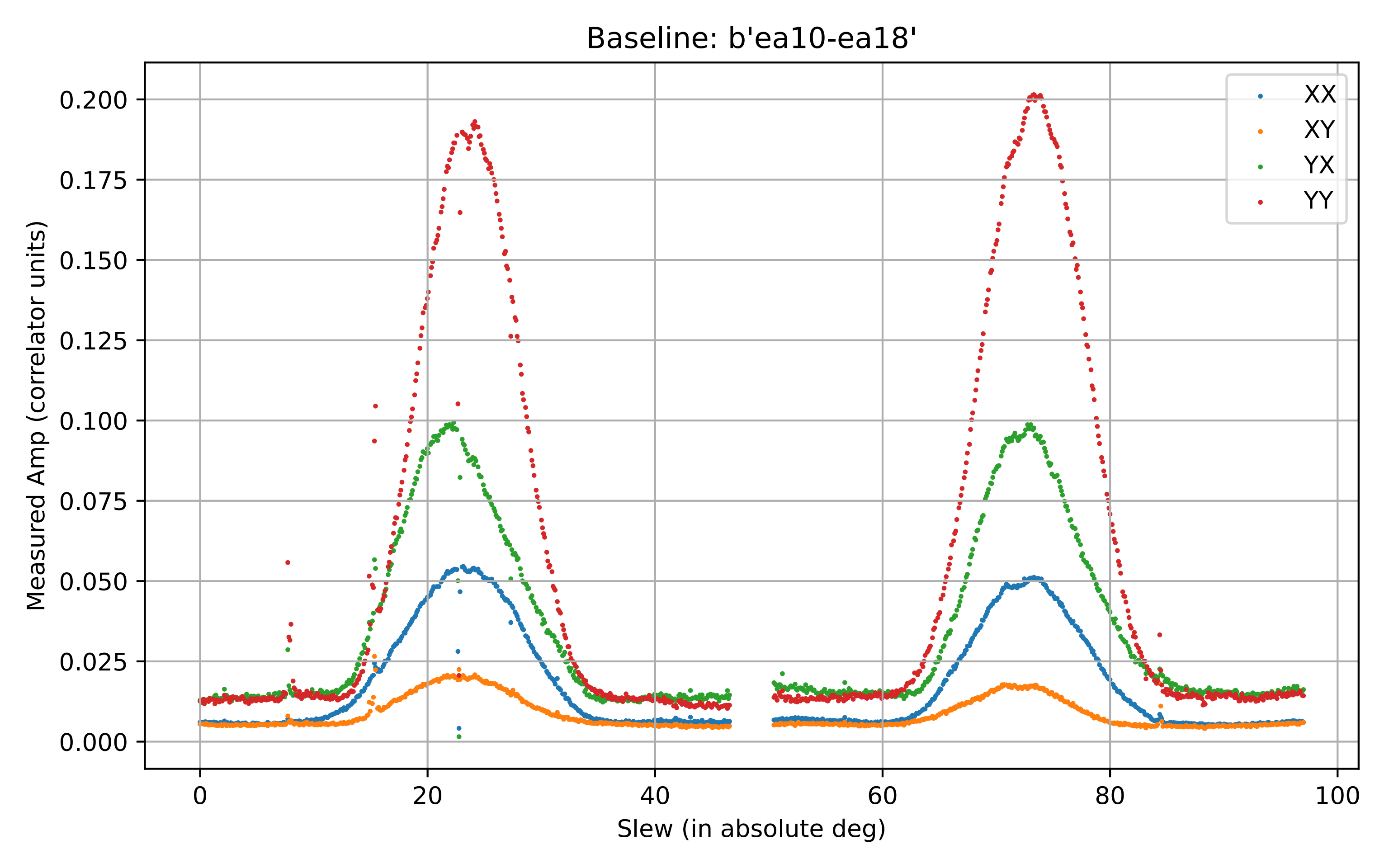
Baseline: b'ea10-ea14'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100


Baseline: b'ea10-ea15'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0
20
40
60
80
100

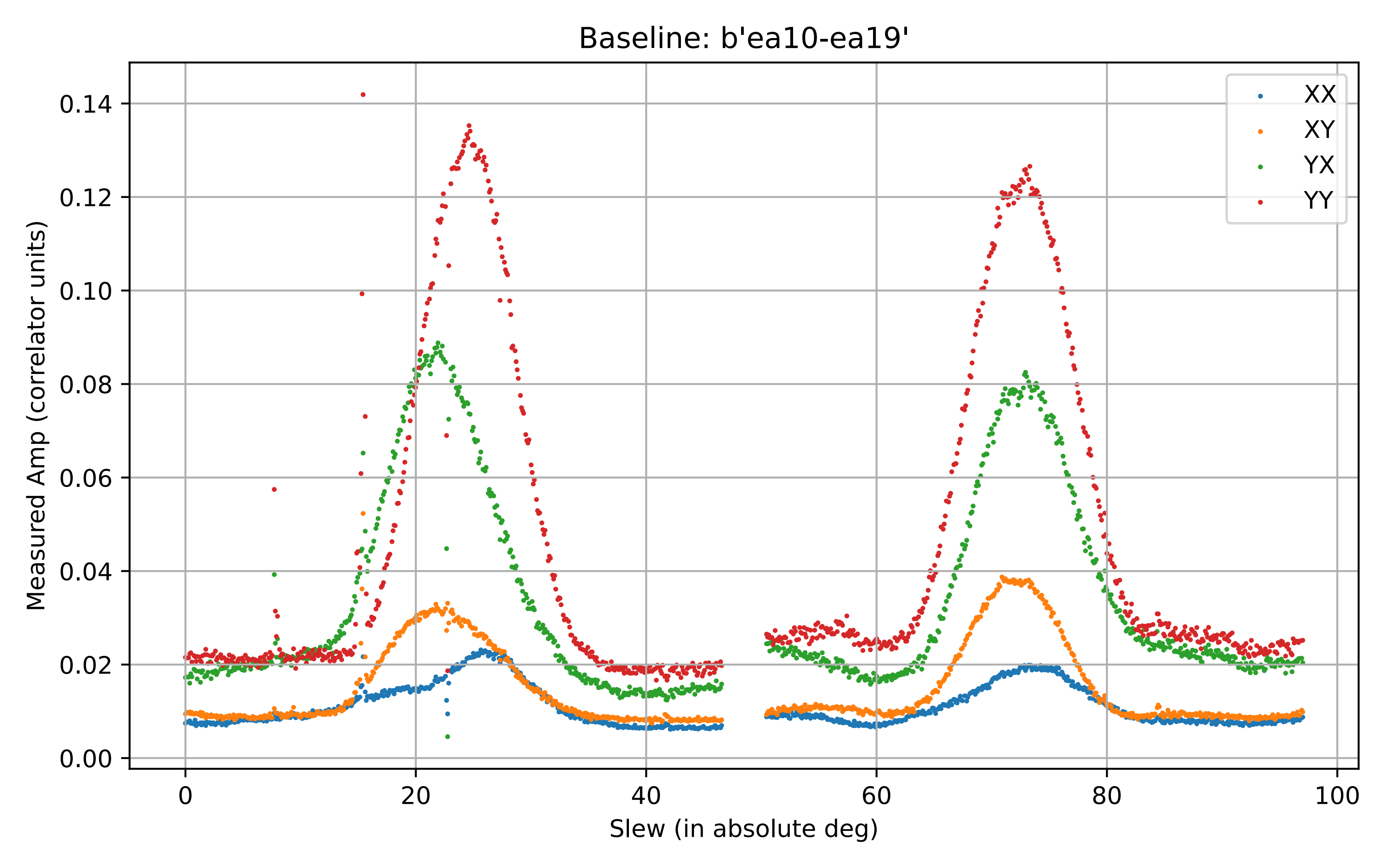

Baseline: b'ea10-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100

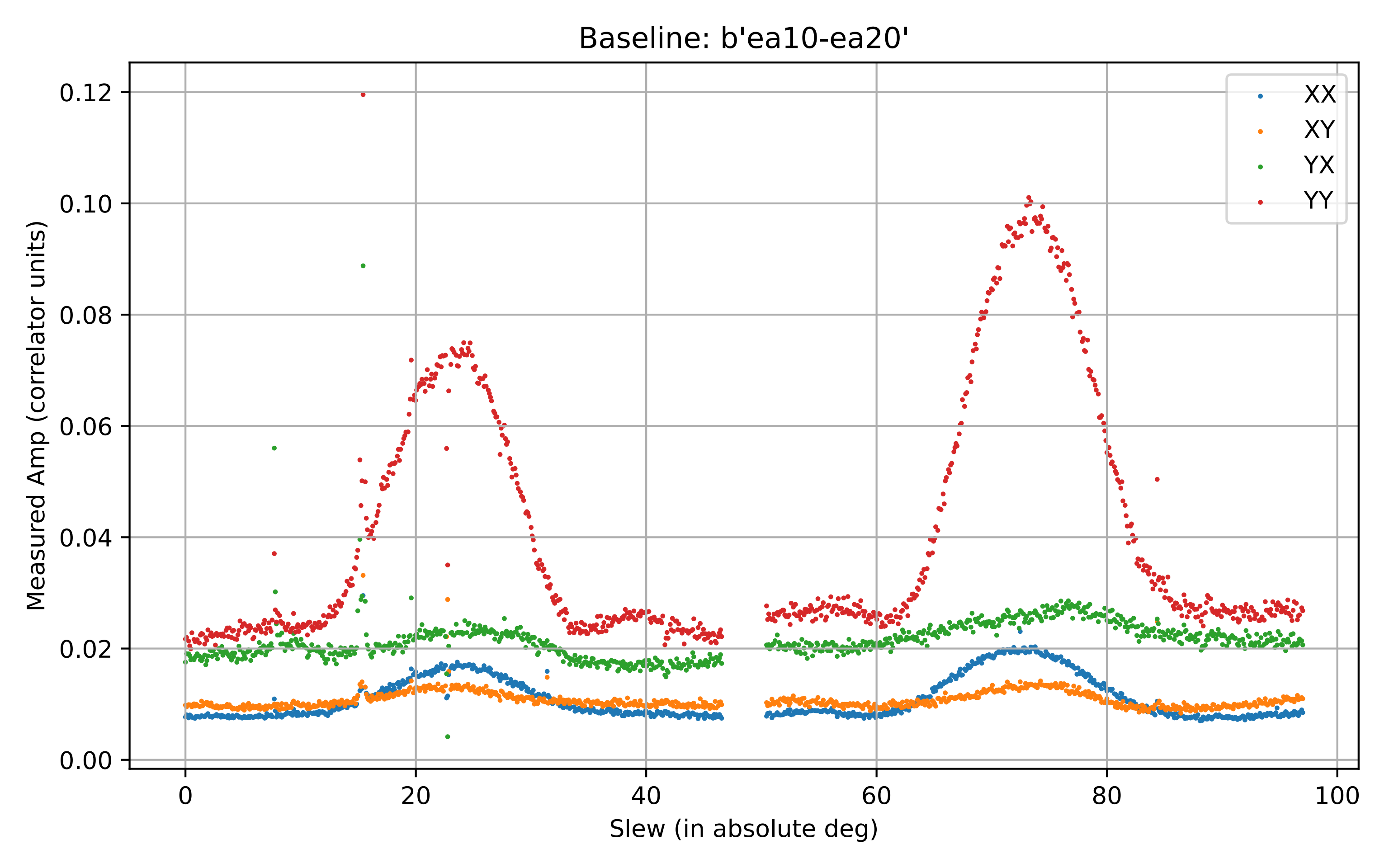


Baseline: b'ea10-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100

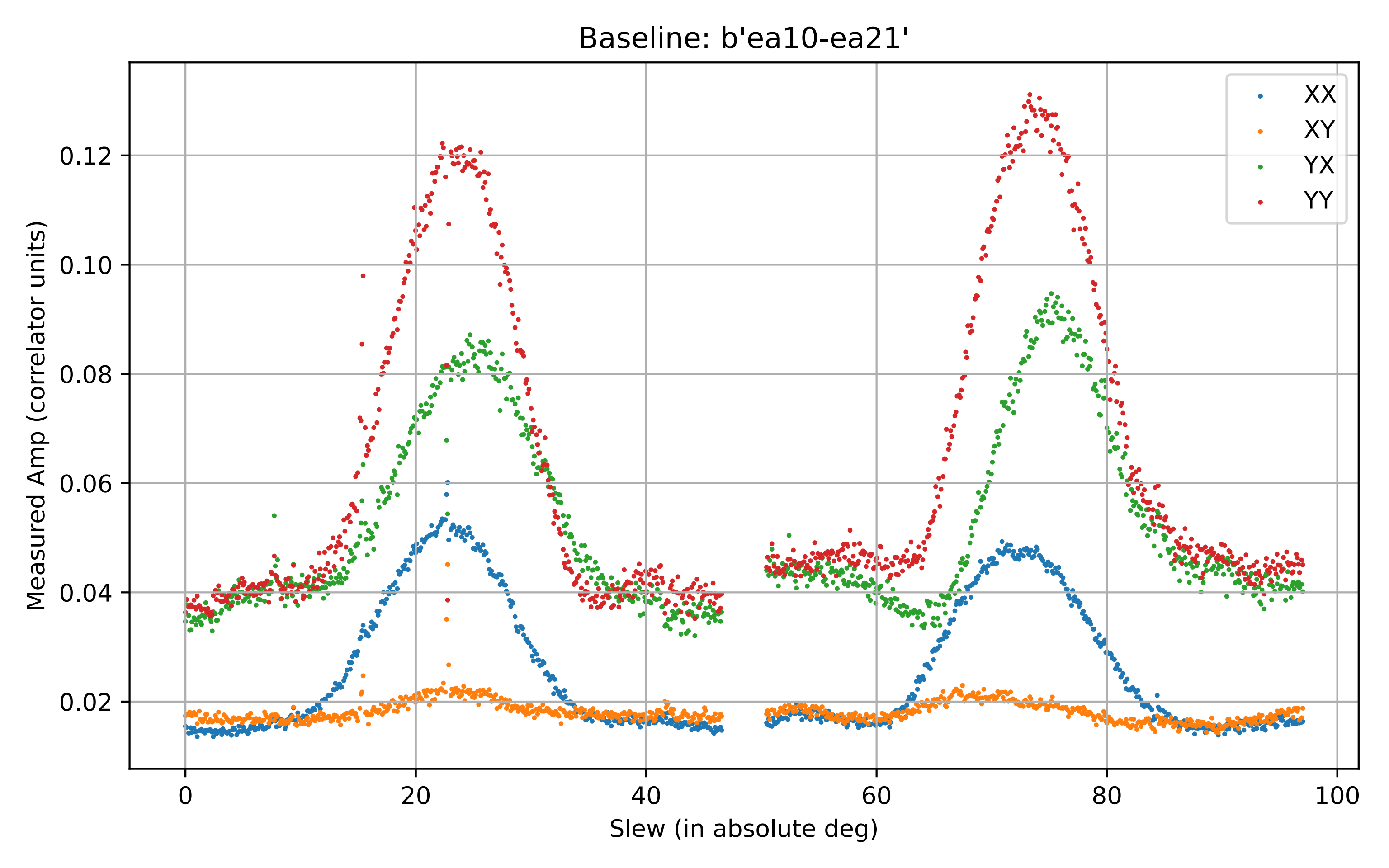


Baseline: b'ea10-ea18'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100

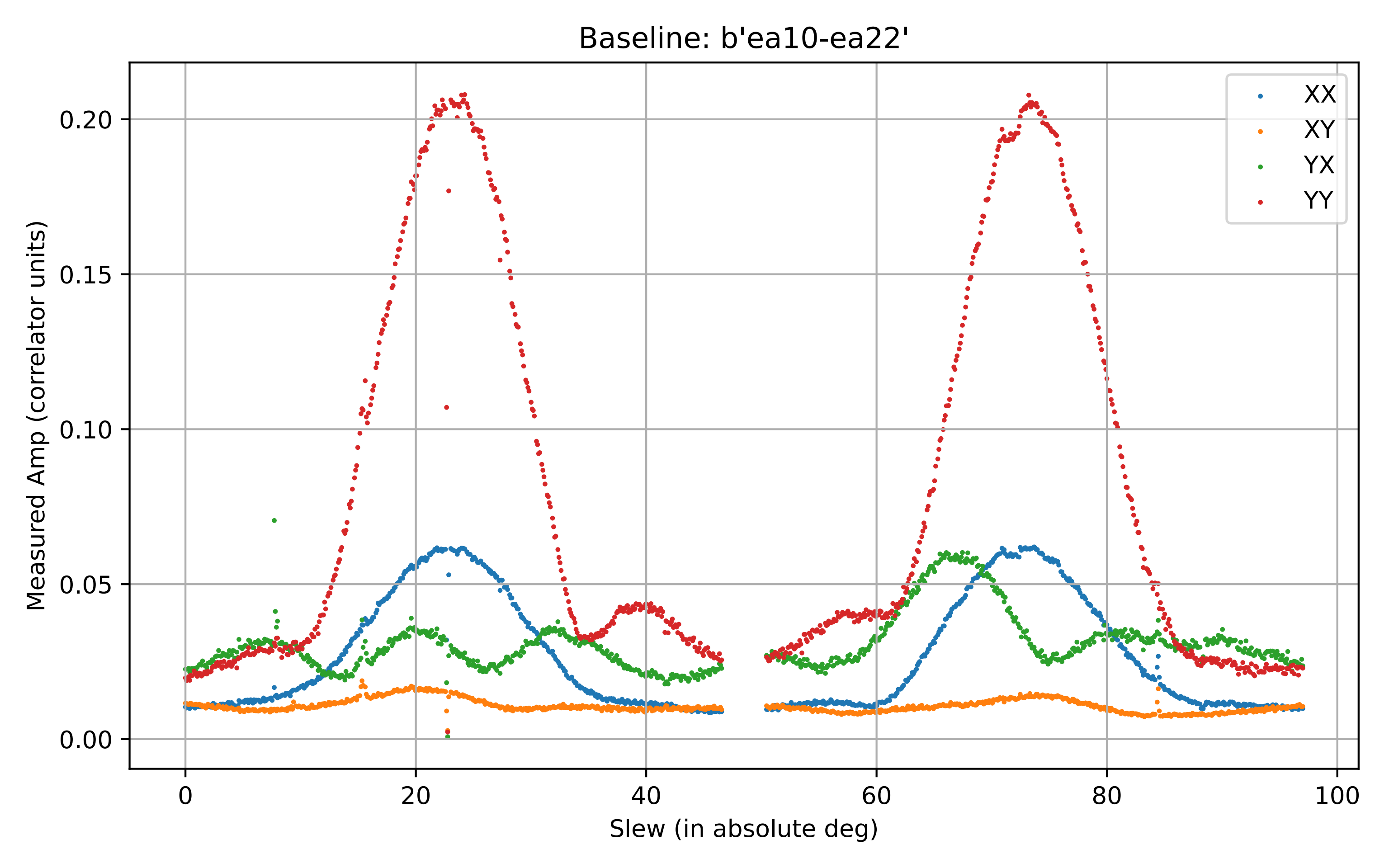

Baseline: b'ea10-ea19'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
Slew (in absolute deg)

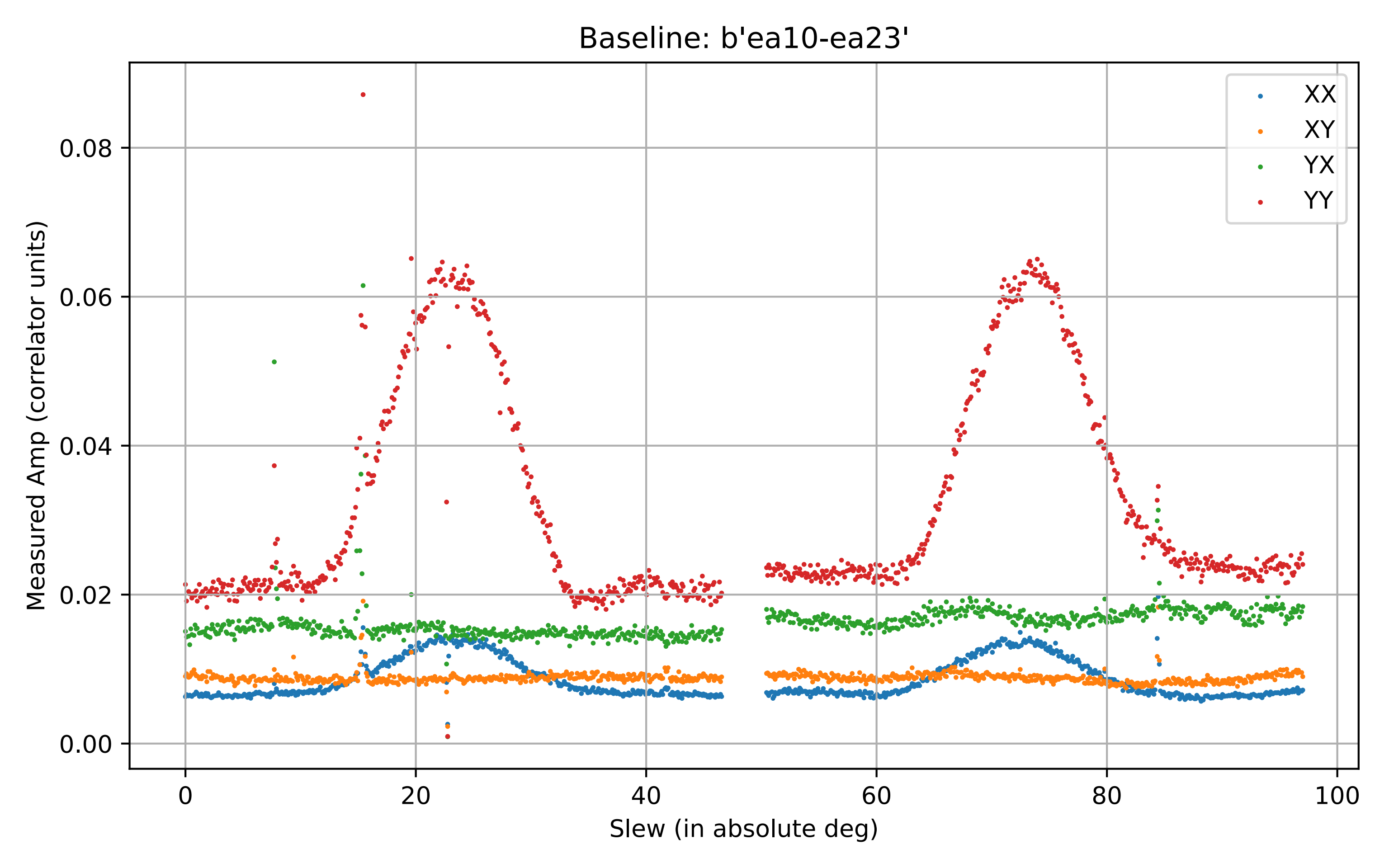


Baseline: b'ea10-ea20'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100

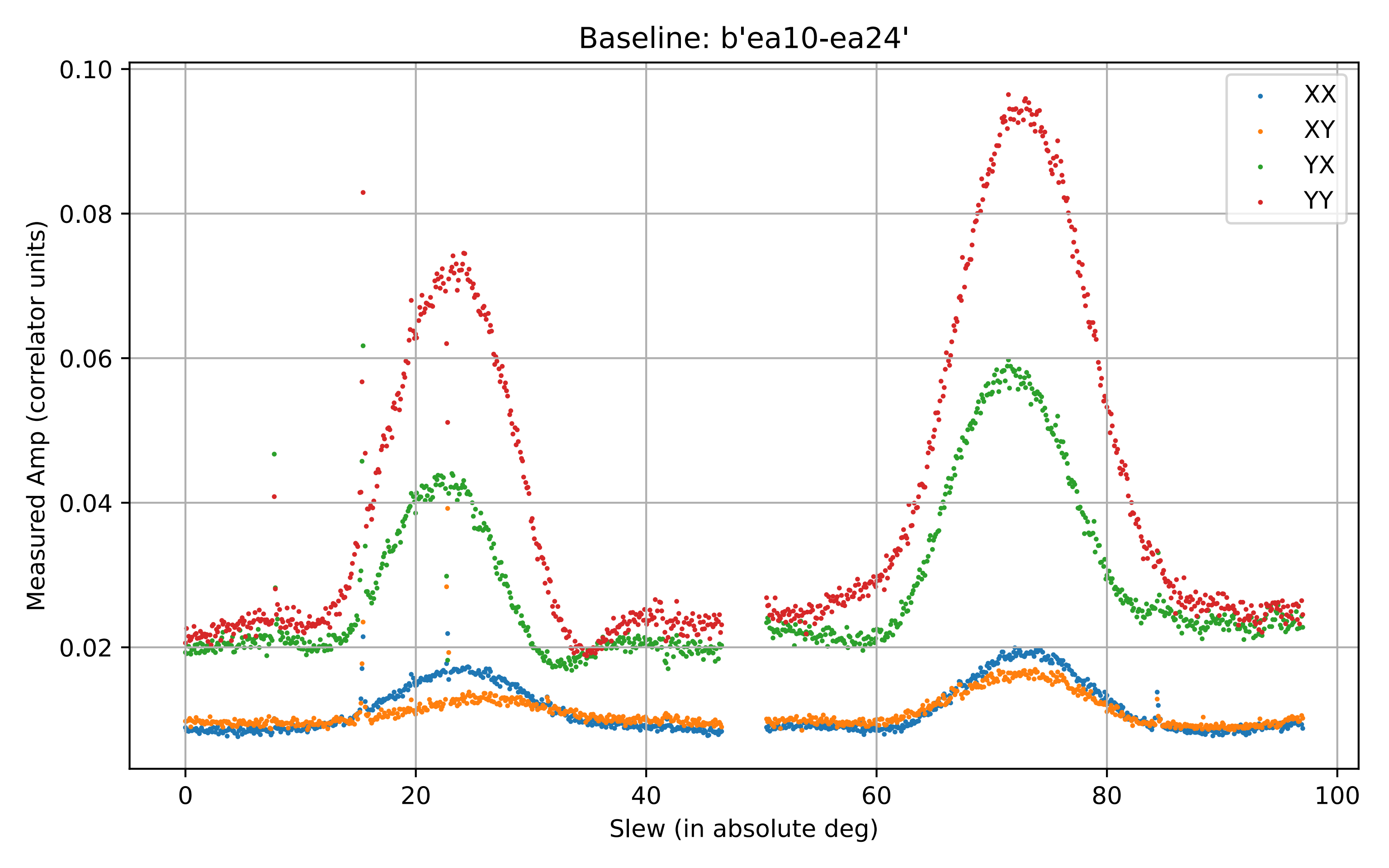


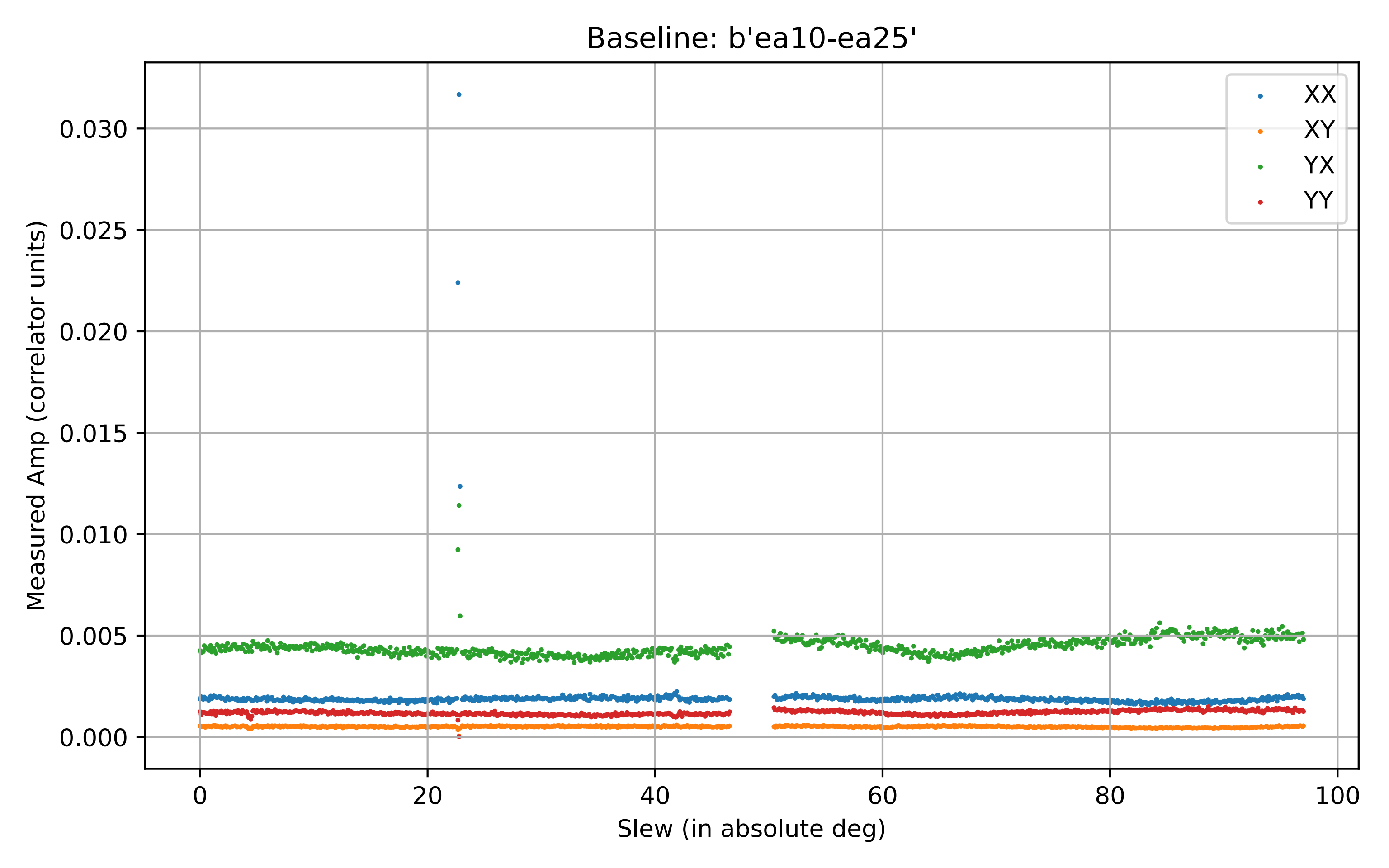
Baseline: b'ea10-ea21'
Measured Amp (correlator units)
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

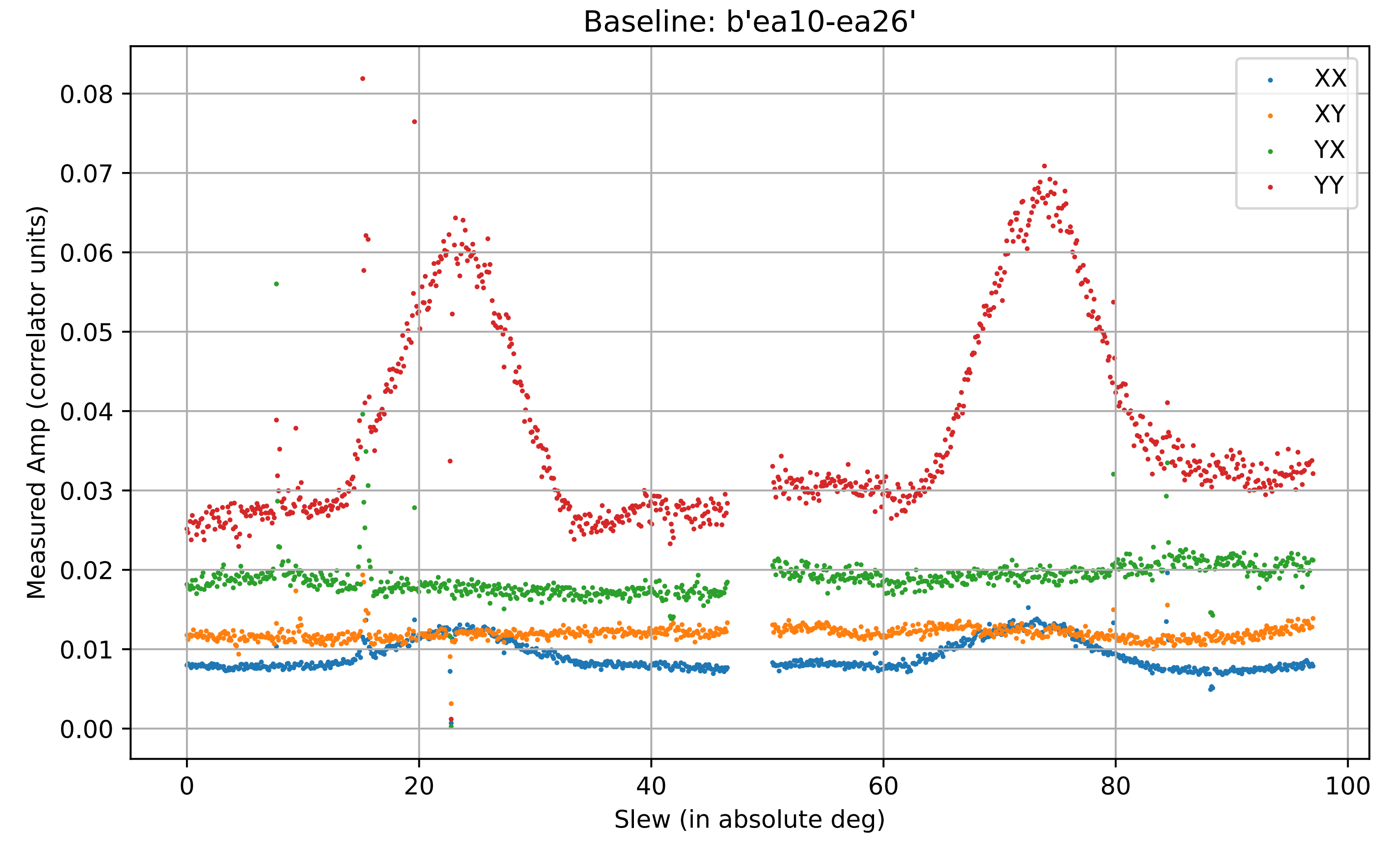

Baseline: b'ea10-ea22'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
Slew (in absolute deg)
0
20
40
60
80
100



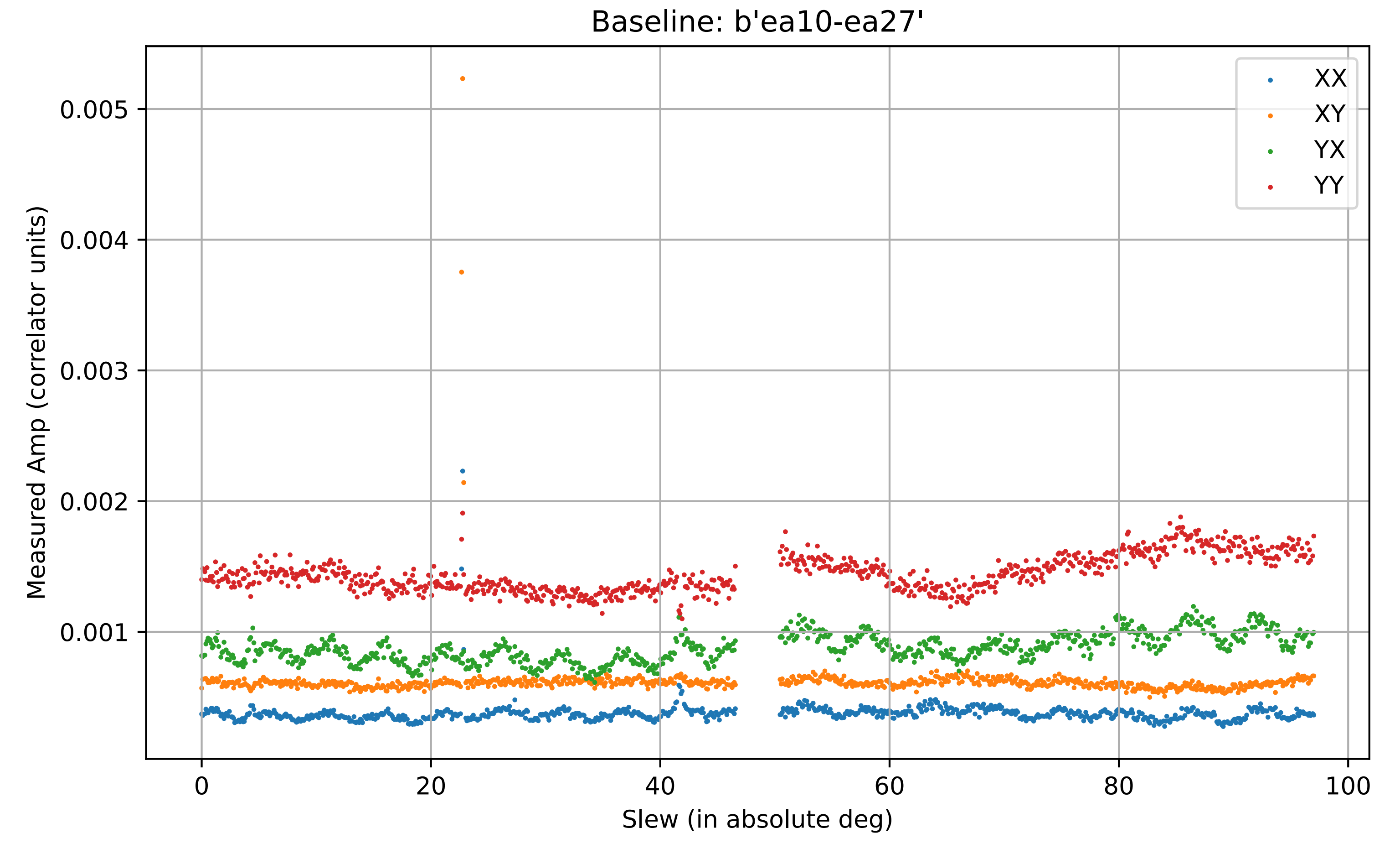
Baseline: b'ea10-ea23'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
Slew (in absolute deg)
0
20
40
60
80
100
XX
XY
YX
YY

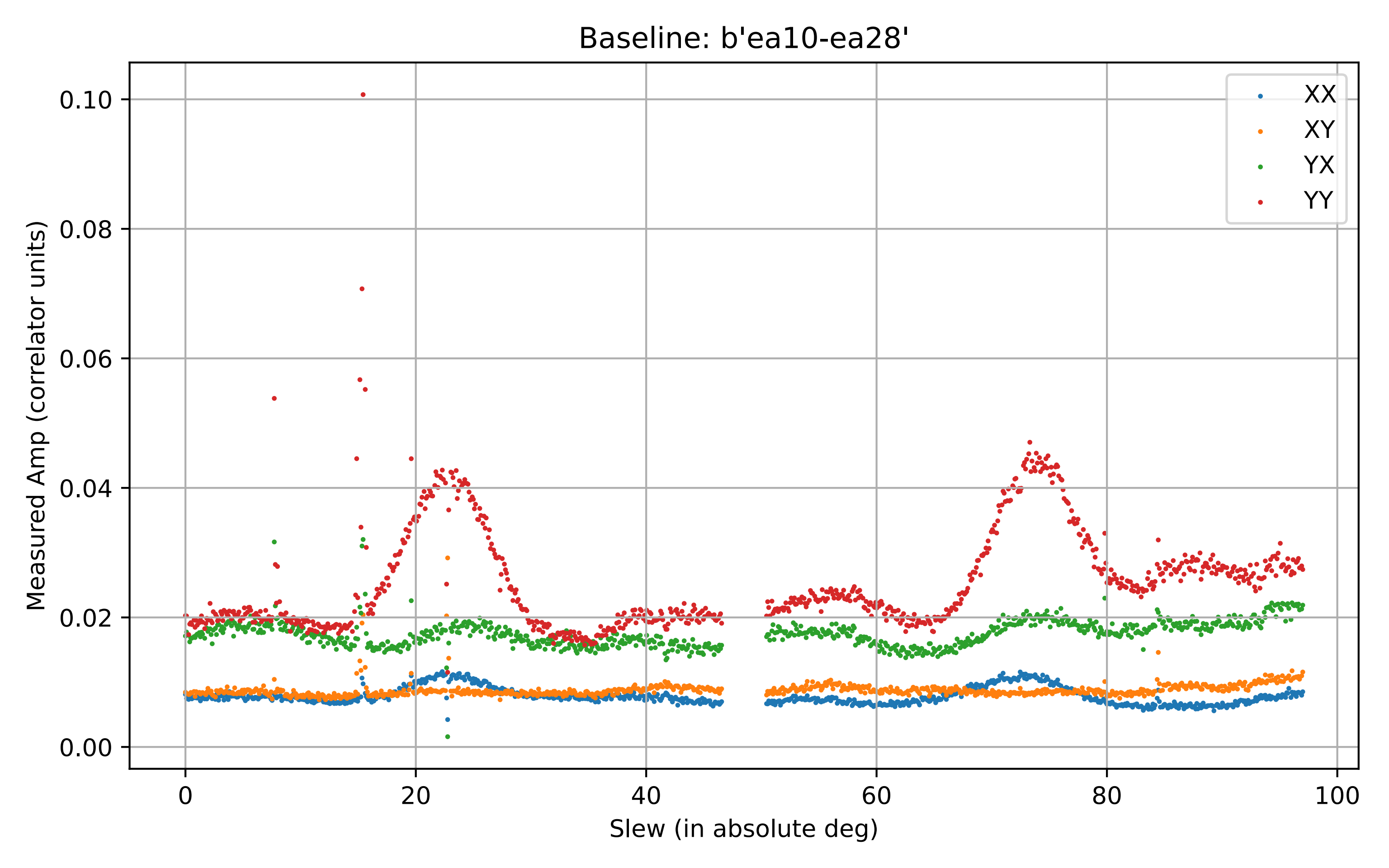

Baseline: b'ea10-ea24'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.10
0.08
0.06
0.04
0.02
0
20
40
60
80
100

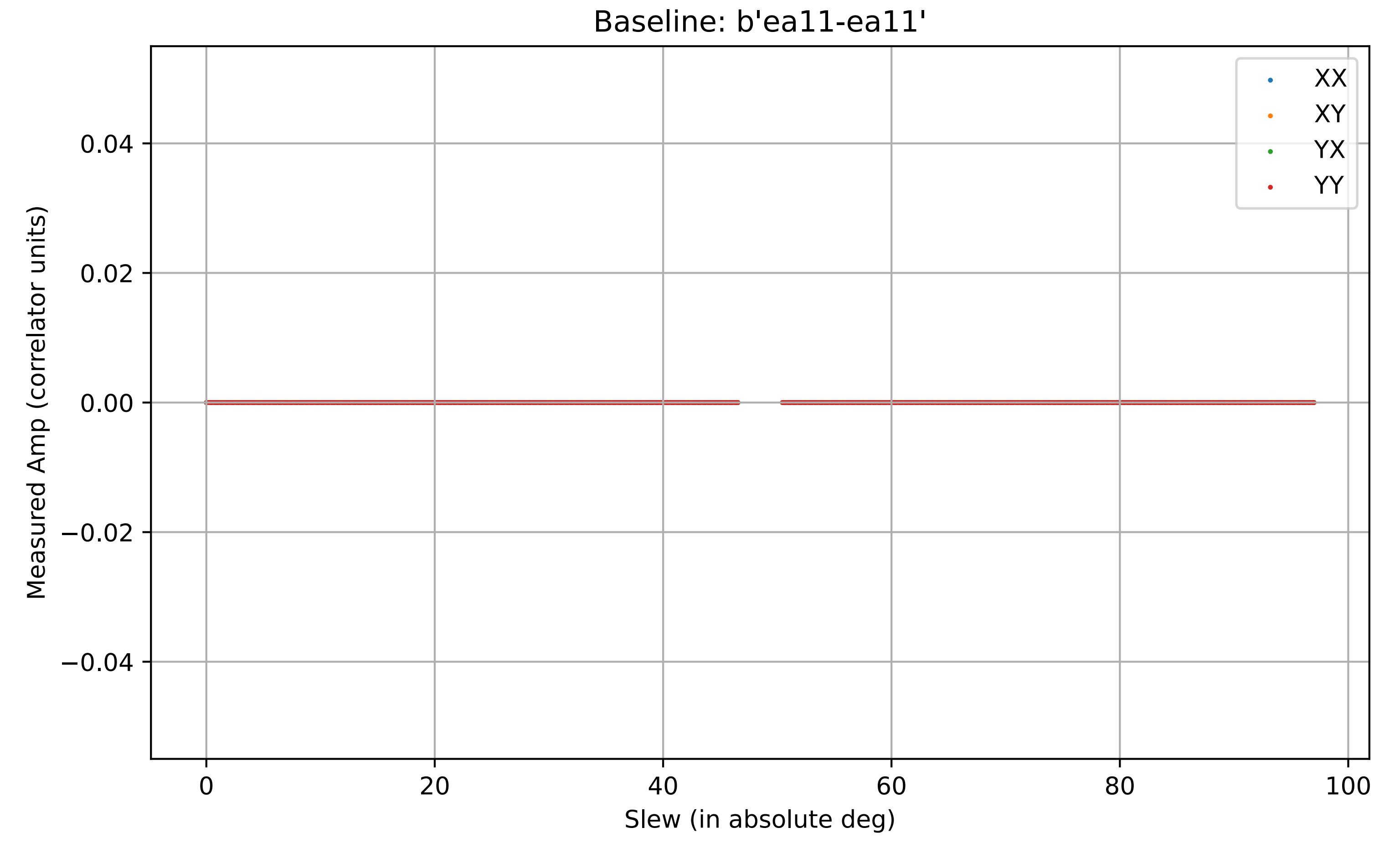

Baseline: b'ea10-ea25'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0
20
40
60
80
100
Slew (in absolute deg)

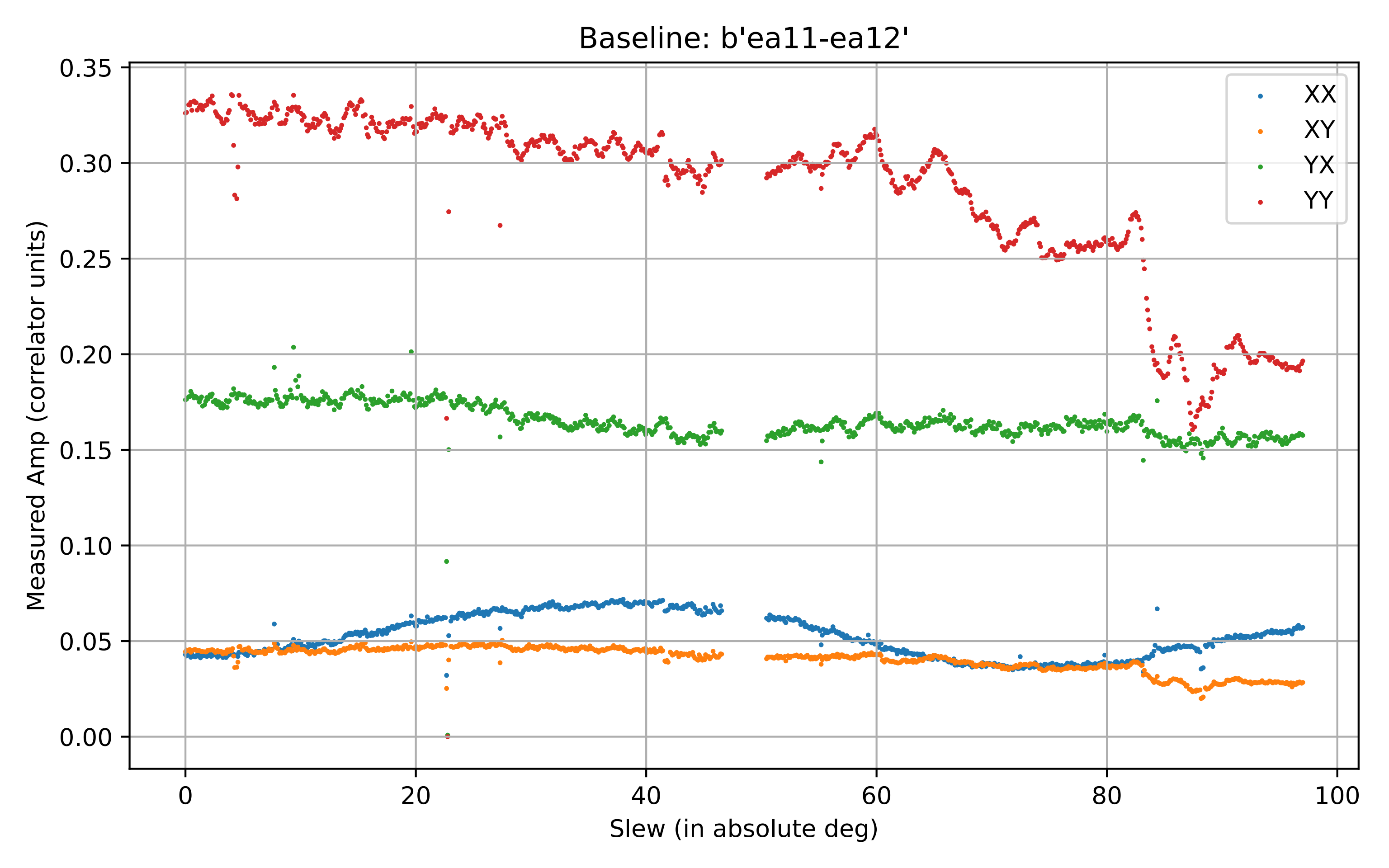


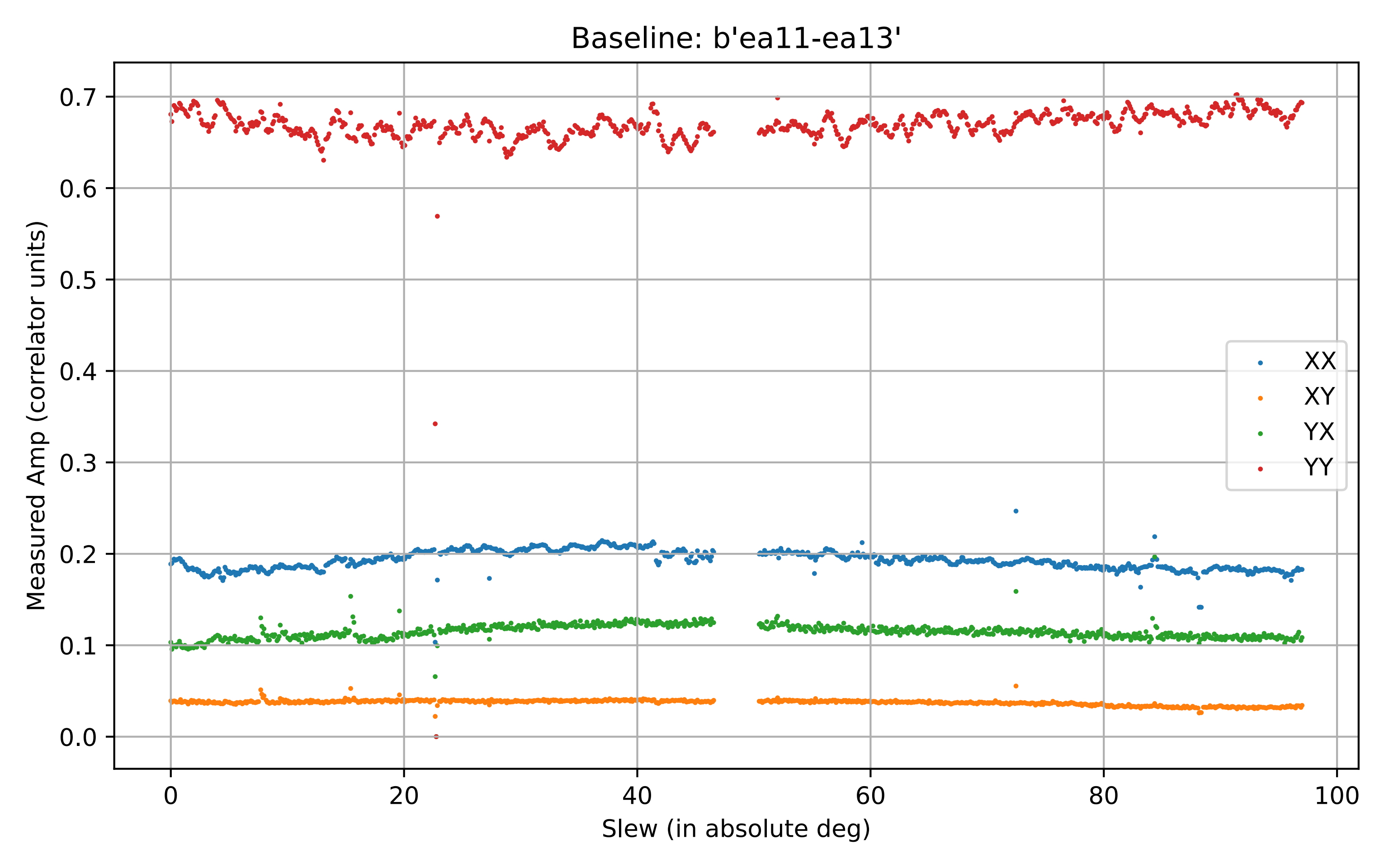
Baseline: b'ea10-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0
20
40
60
80
100

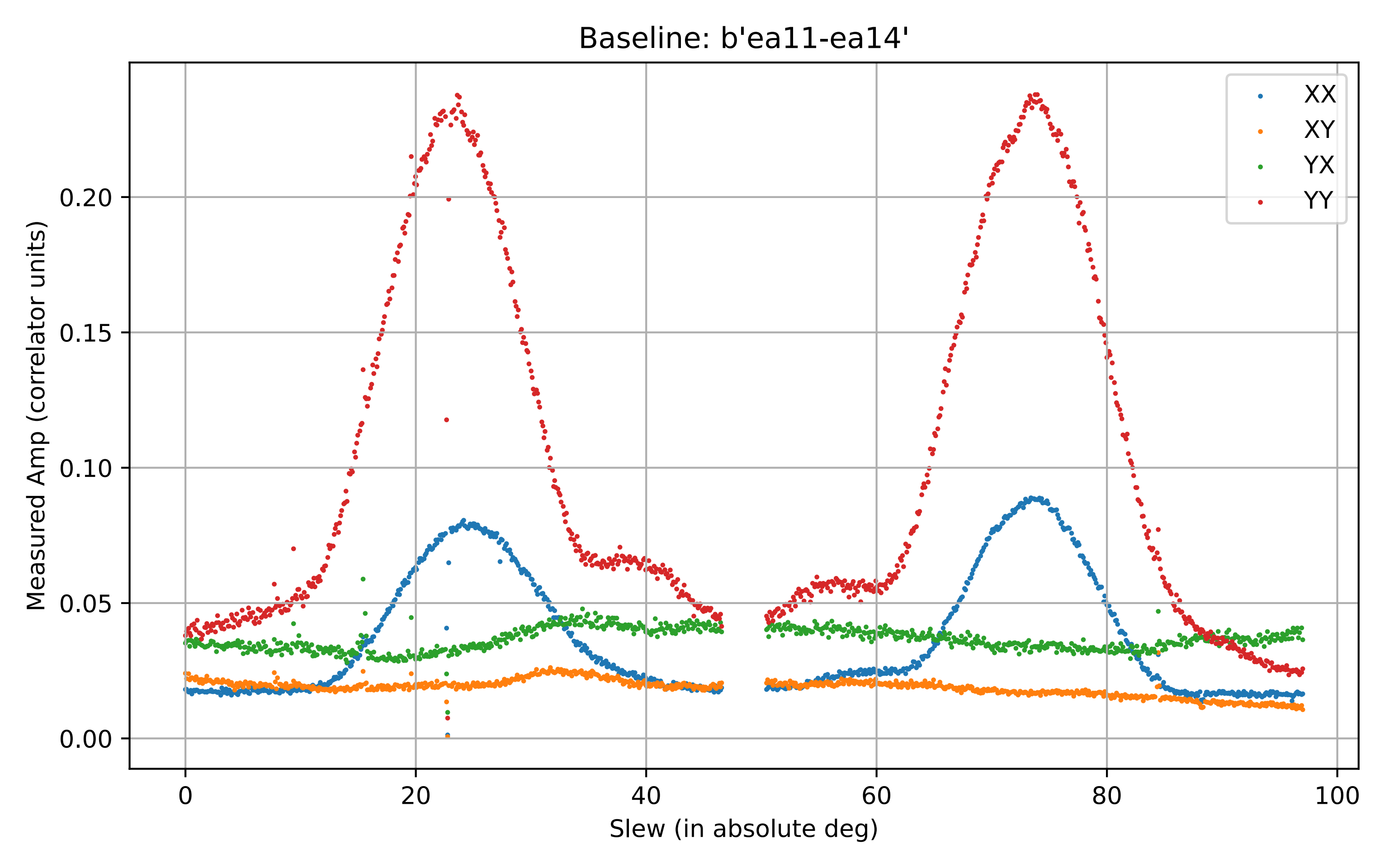

Baseline: b'ea10-ea27'
XX
XY
YX
YY
Measured Amp (correlator units)
0.005
0.004
0.003
0.002
0.001
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea10-ea28'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

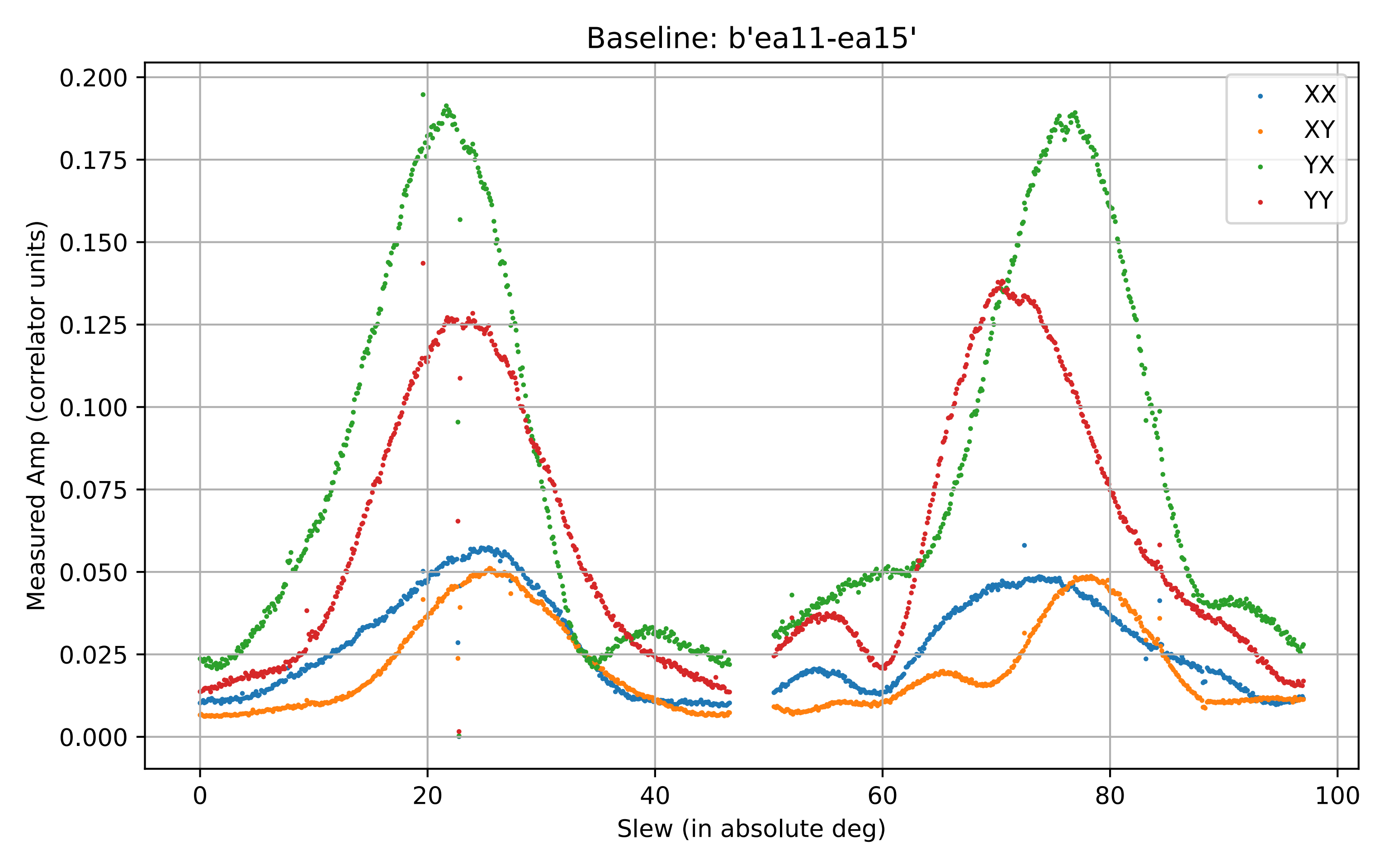

Baseline: b'ea11-ea11'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.04
0.02
0.00
−0.02
−0.04
0
20
40
60
80
100


Baseline: b'ea11-ea12'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100

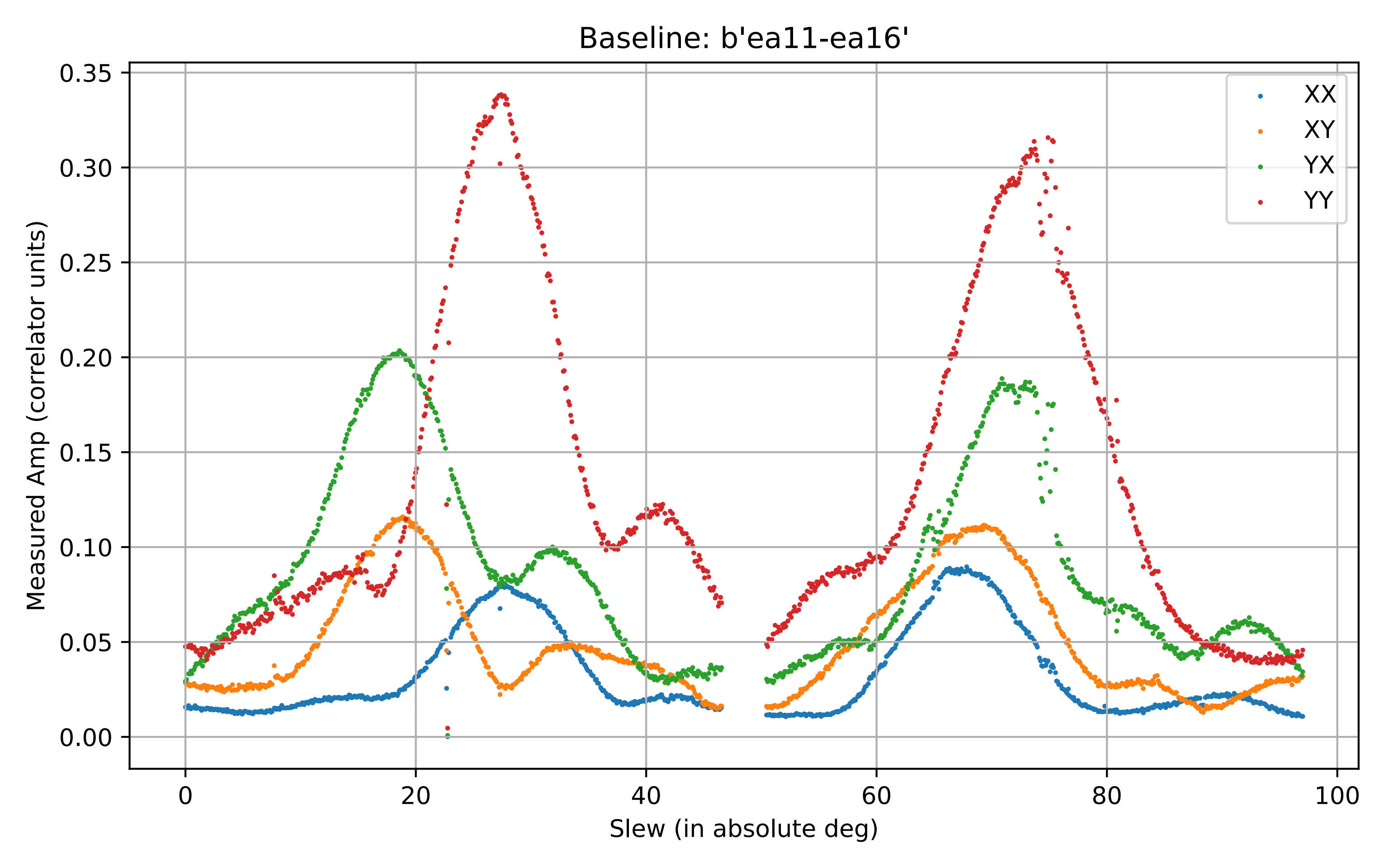

Baseline: b'ea11-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
20
40
60
80
100



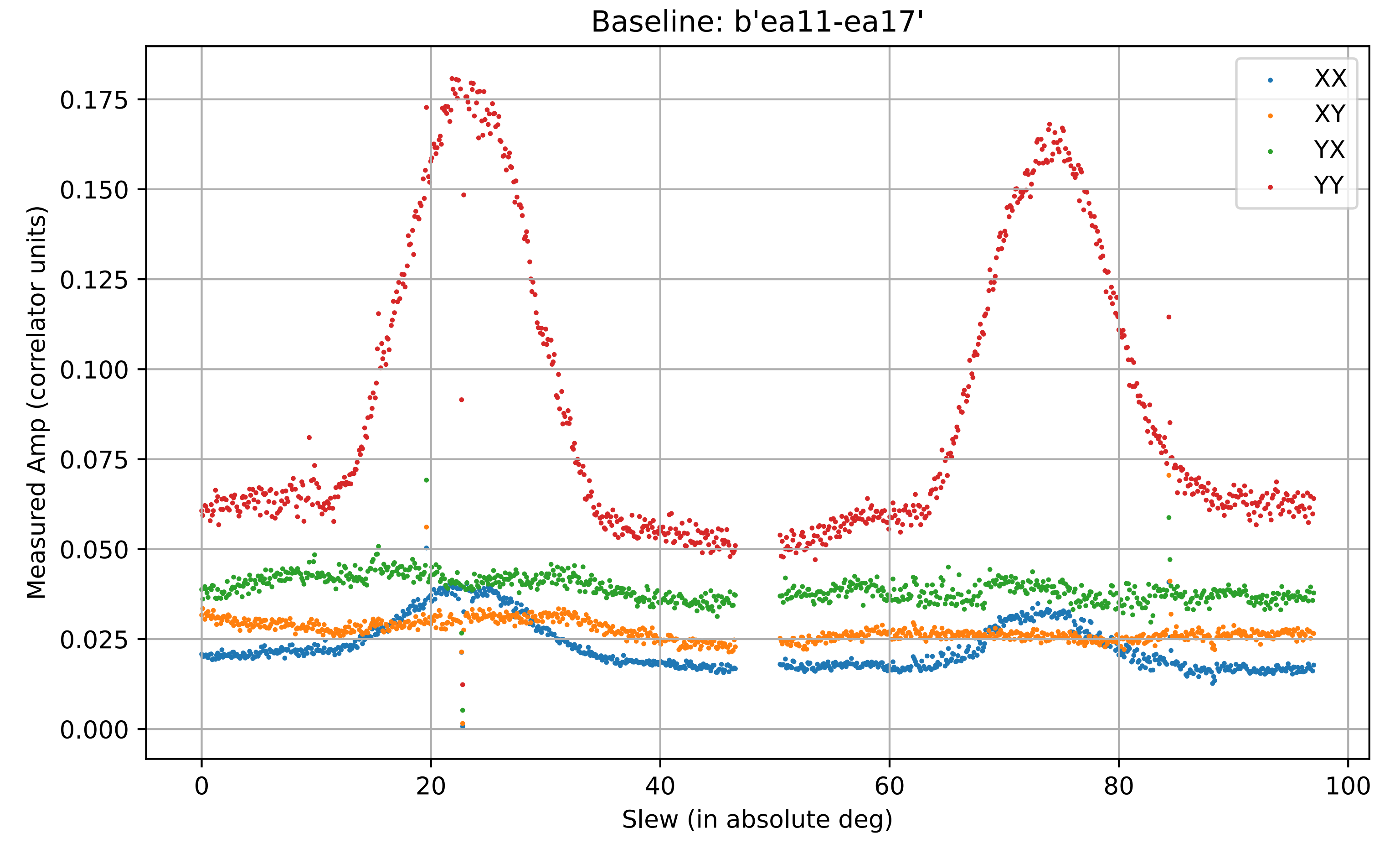
Baseline: b'ea11-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
Slew (in absolute deg)

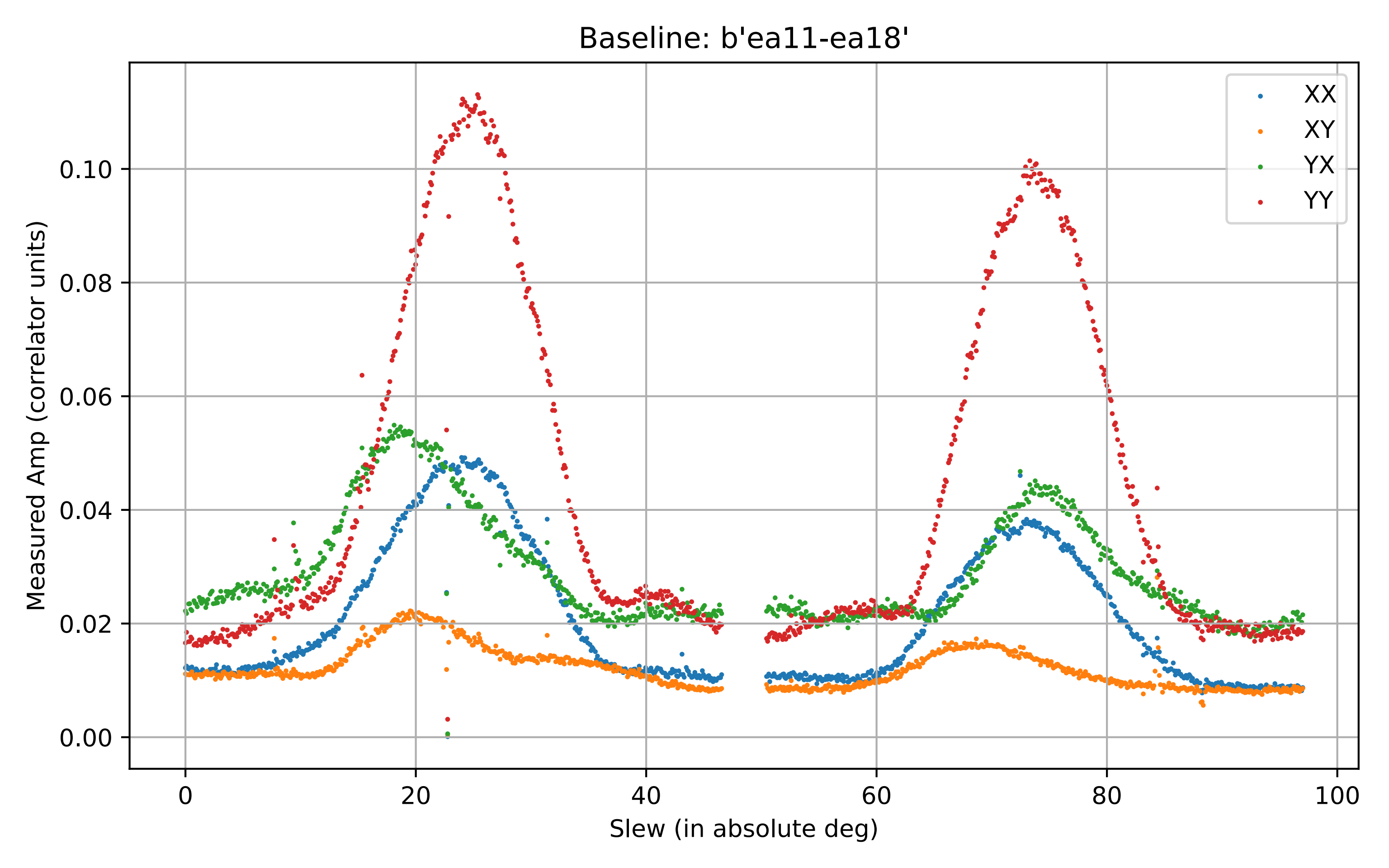


Baseline: b'ea11-ea15'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100

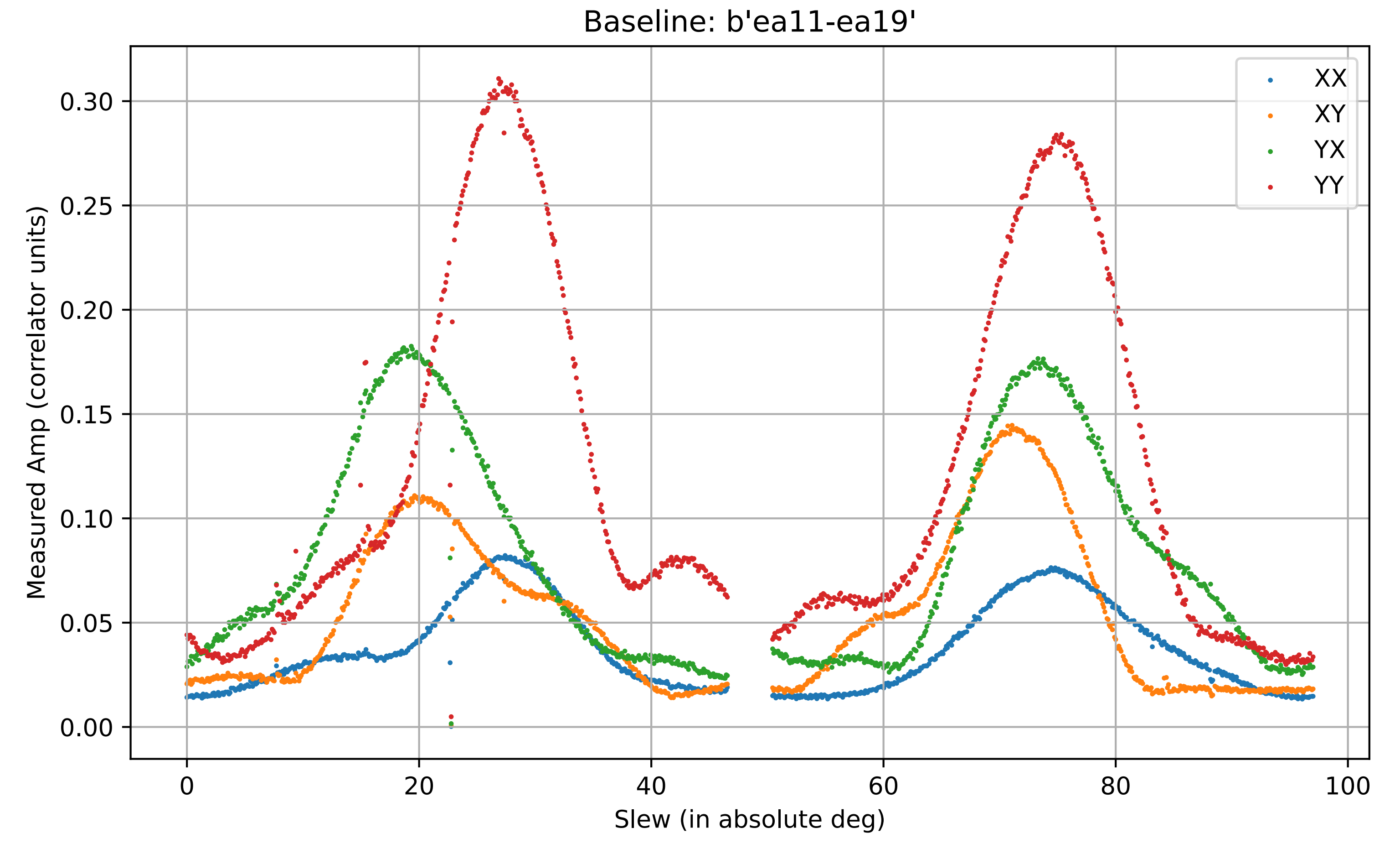


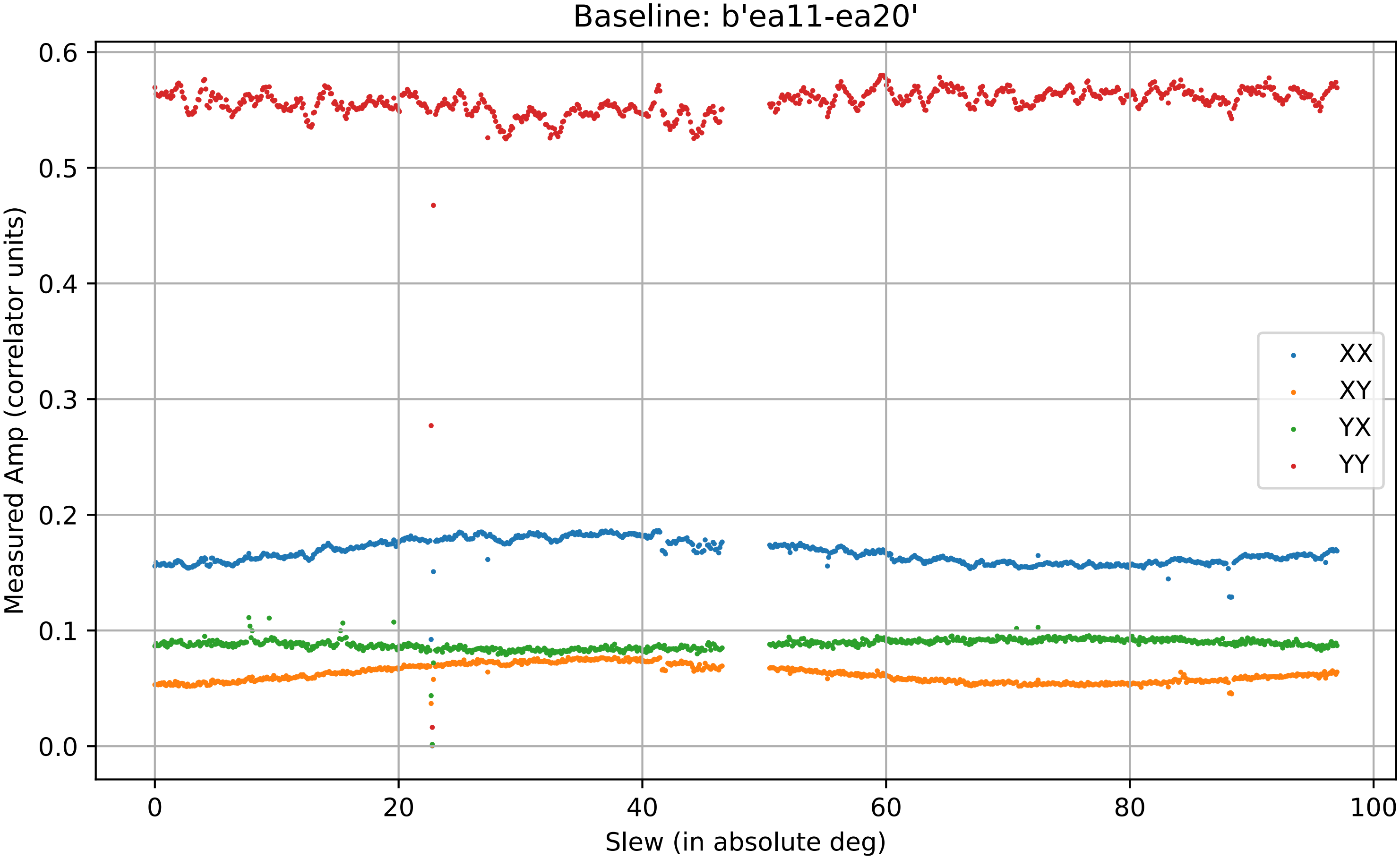
Baseline: b'ea11-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100

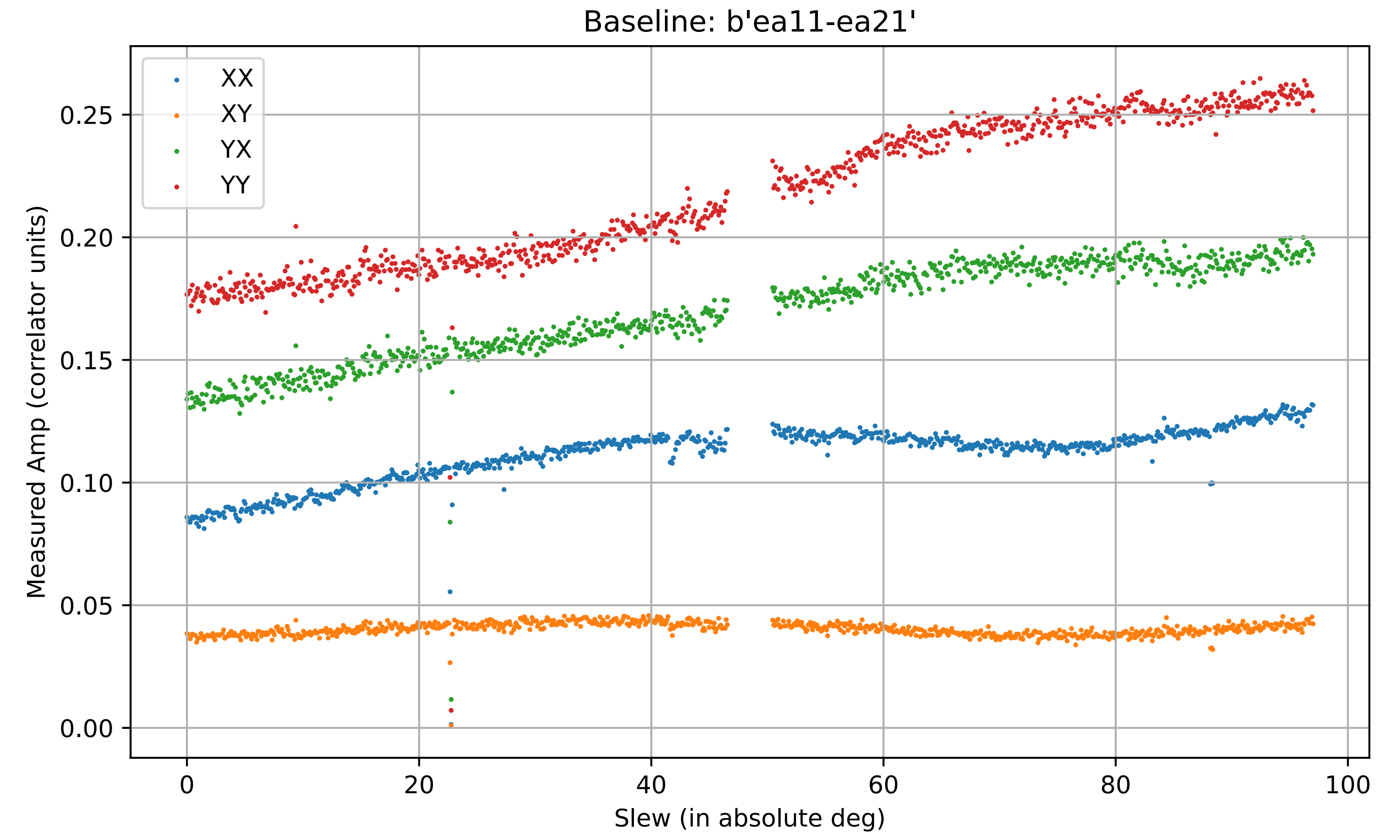

Baseline: b'ea11-ea17'
XX
XY
YX
YY
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)



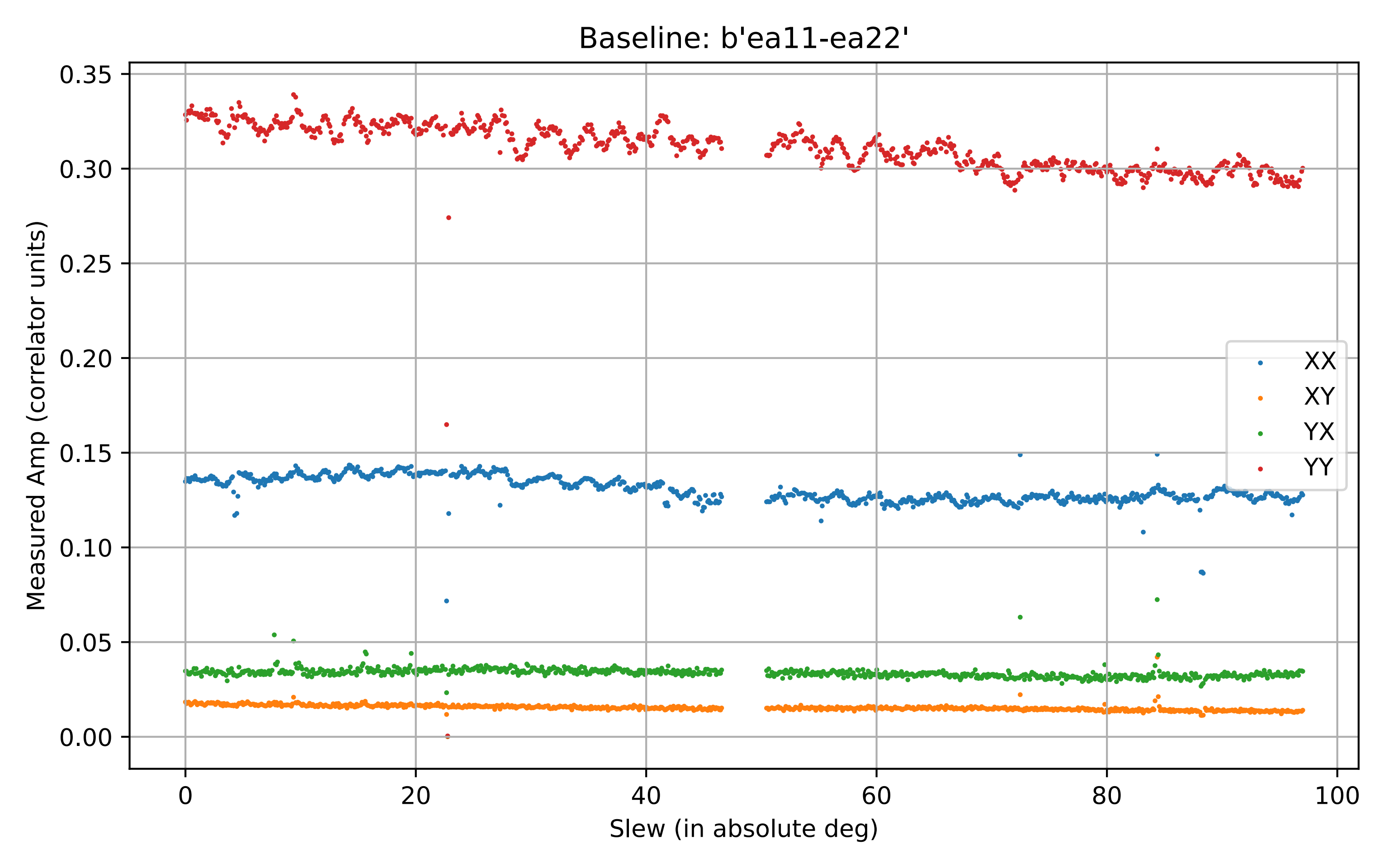
Baseline: b'ea11-ea18'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100

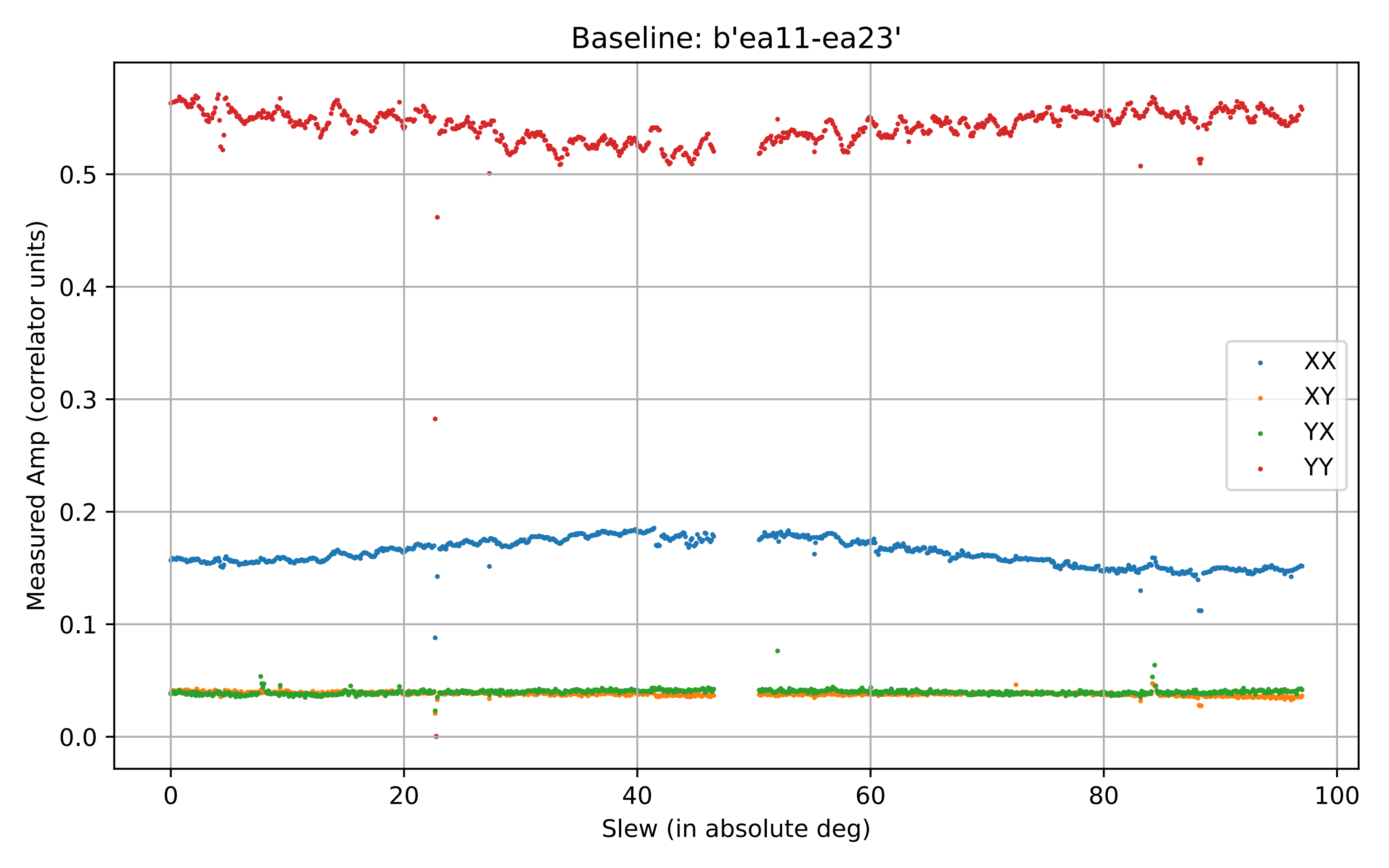

Baseline: b'ea11-ea19'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100

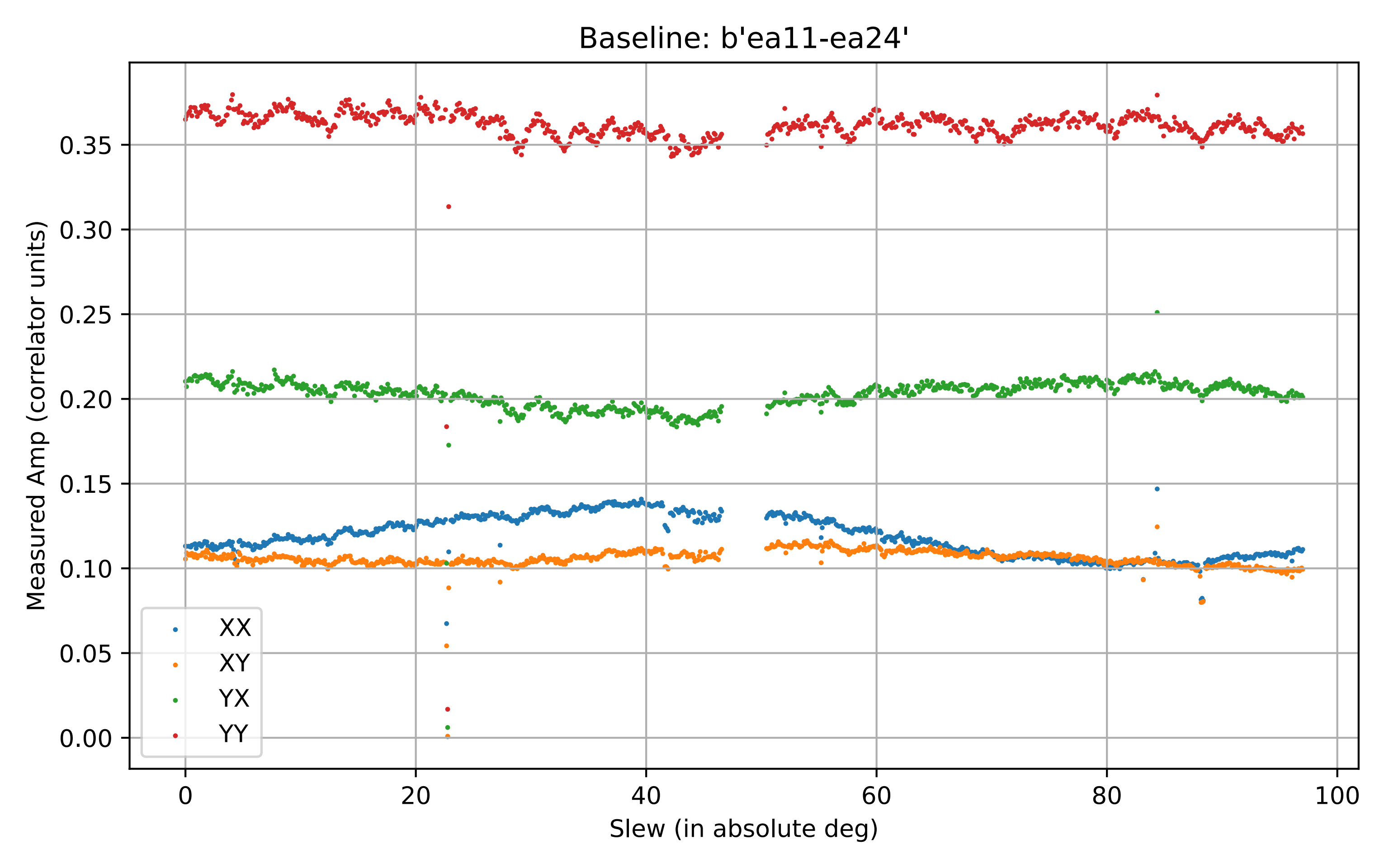

Baseline: b'ea11-ea20'
Measured Amp (correlator units)
Slew (in absolute deg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0
20
40
60
80
100
XX
XY
YX
YY



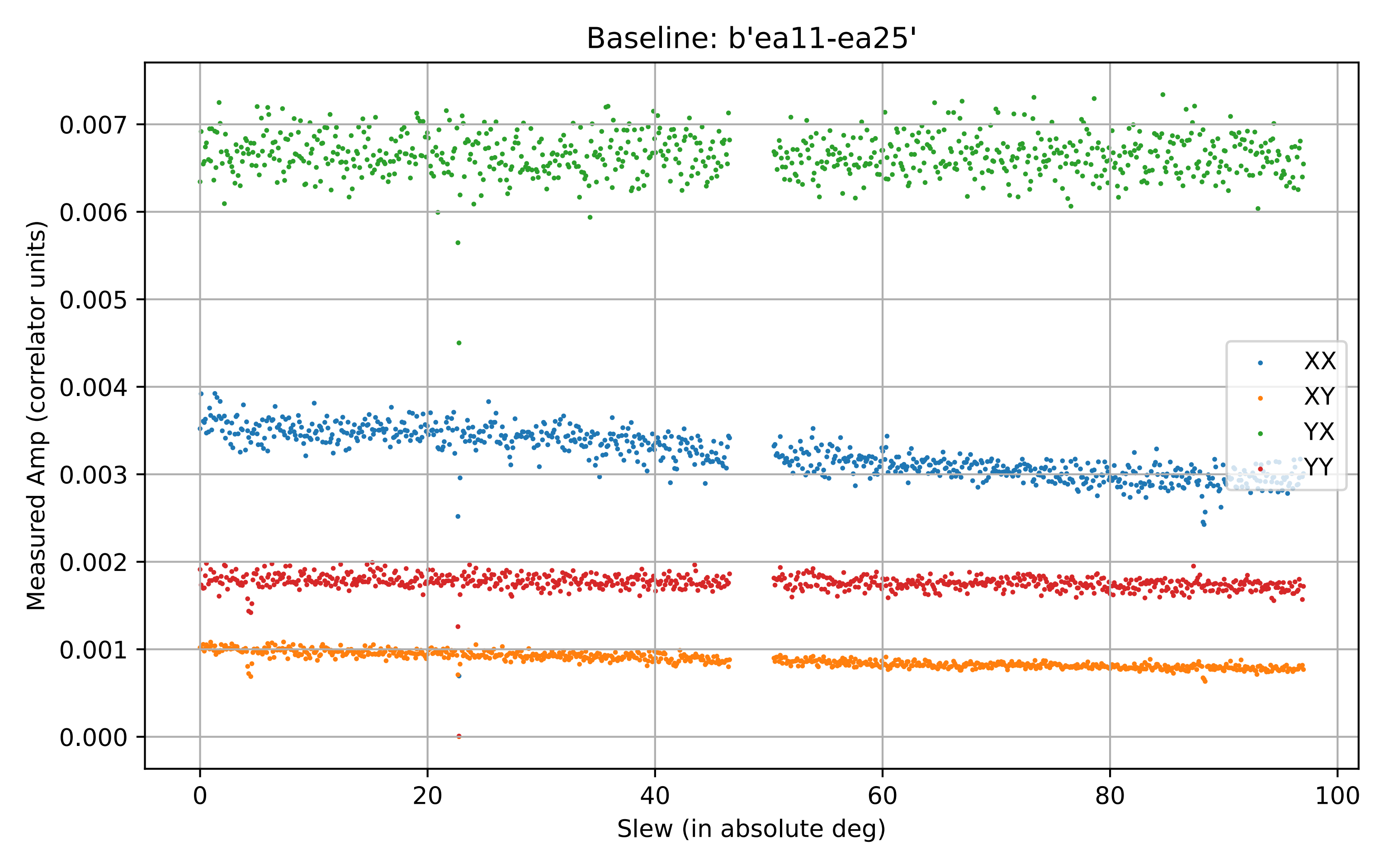
Baseline: b'ea11-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea11-ea22'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100

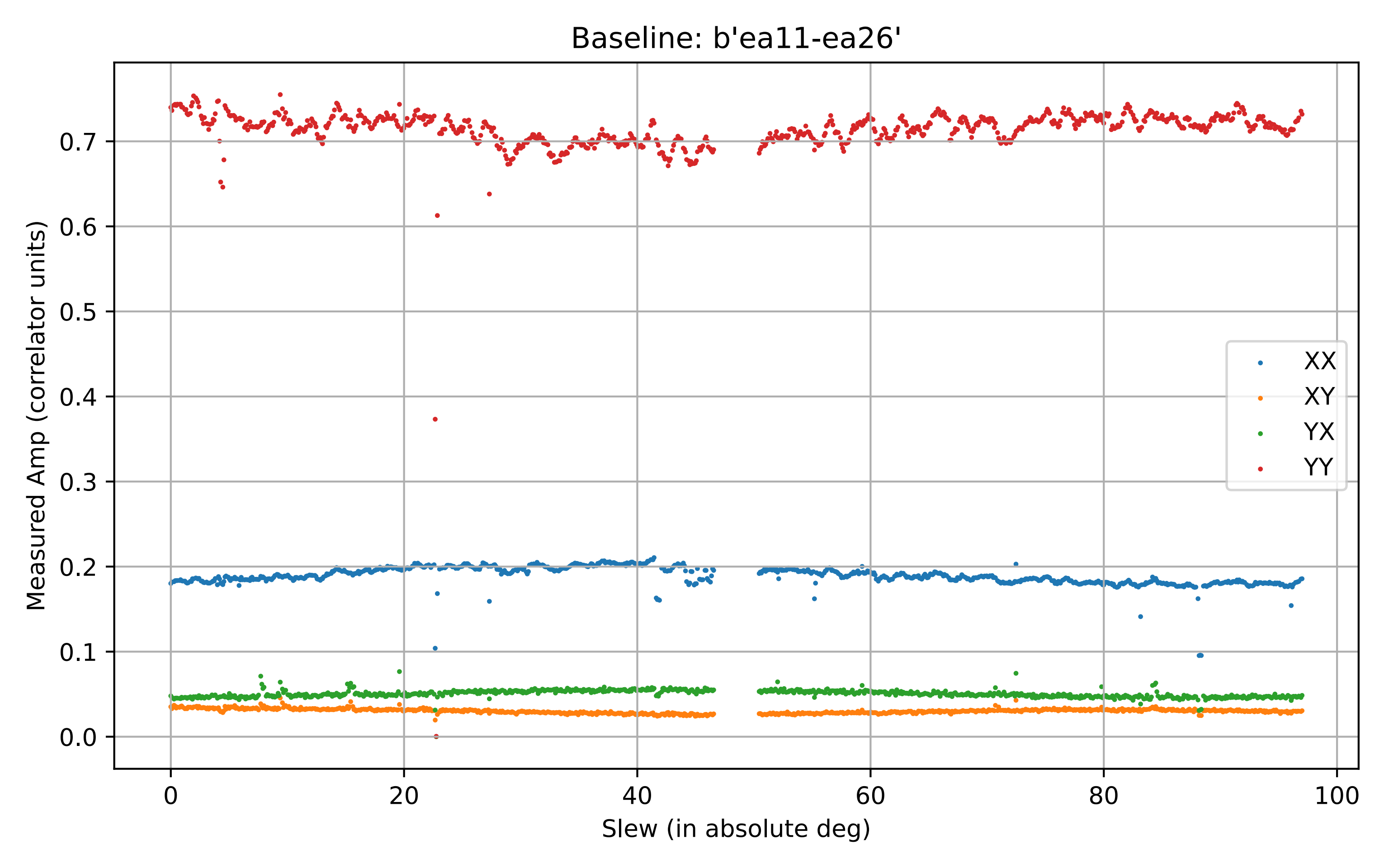

Baseline: b'ea11-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100

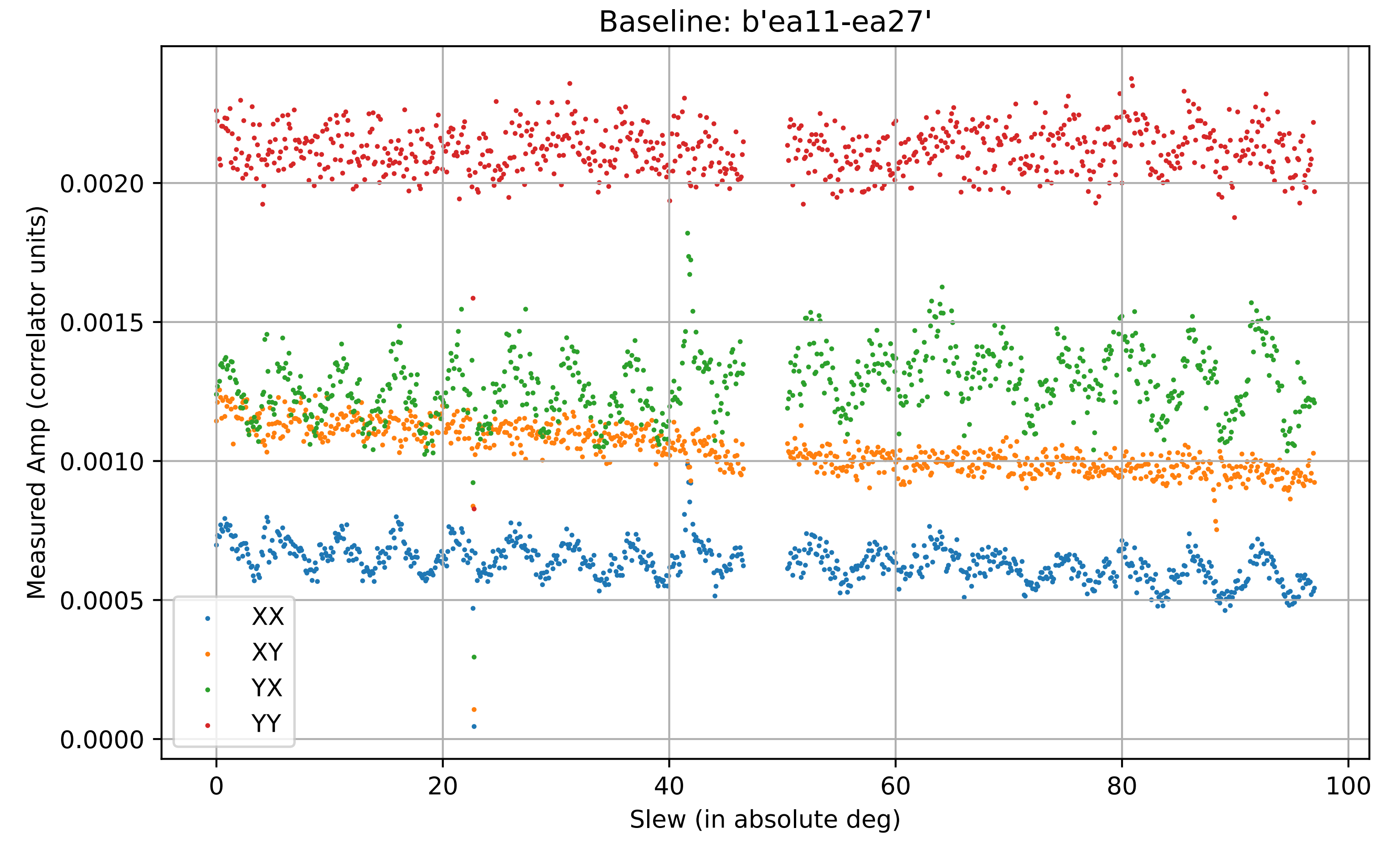


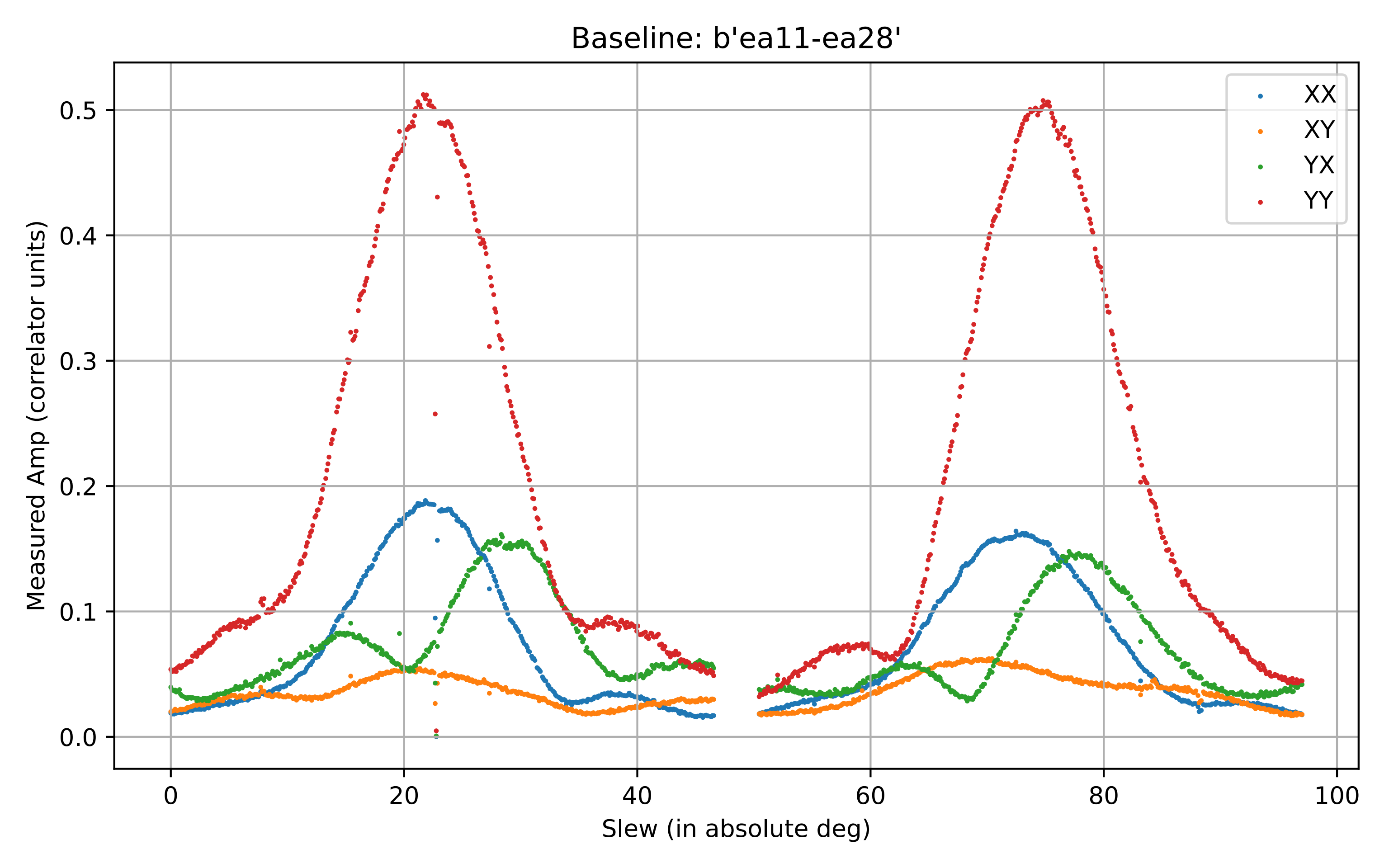
Baseline: b'ea11-ea24'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
20
40
60
80
100
XX
XY
YX
YY

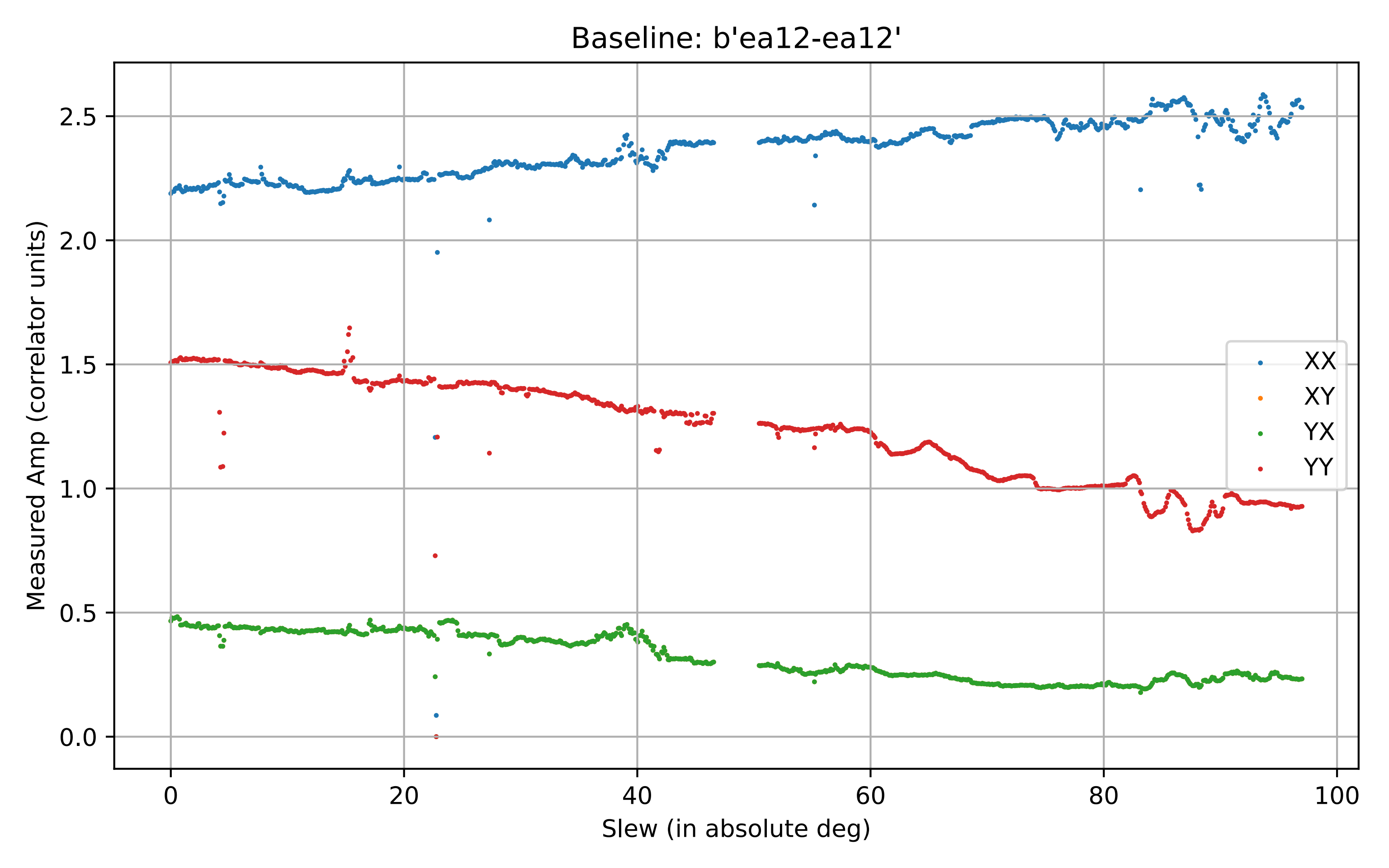


Baseline: b'ea11-ea25'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.001
0.002
0.003
0.004
0.005
0.006
0.007
0
20
40
60
80
100

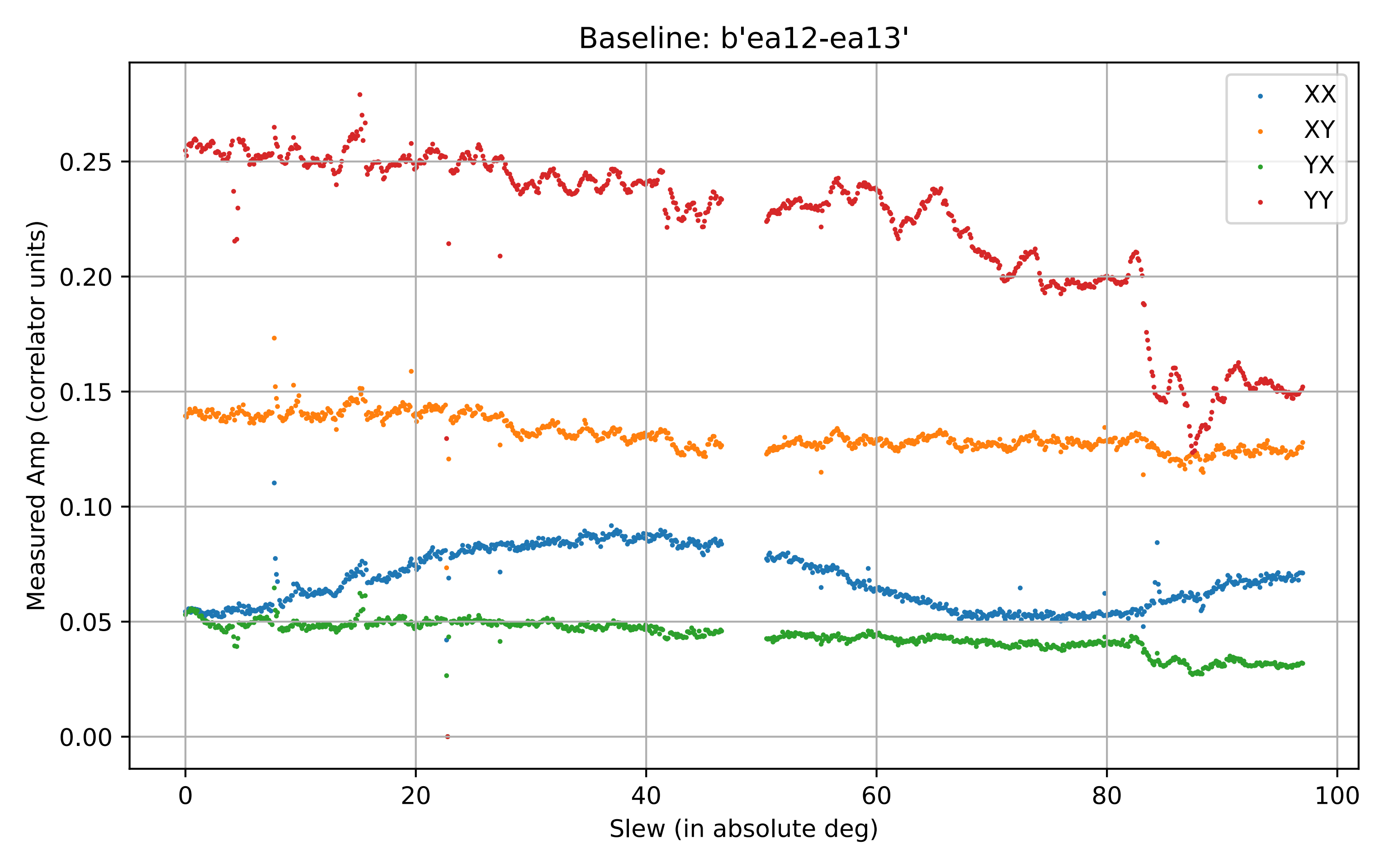

Baseline: b'ea11-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
20
40
60
80
100
XX
XY
YX
YY


Baseline: b'ea11-ea27'
Measured Amp (correlator units)
0.0000
0.0005
0.0010
0.0015
0.0020
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

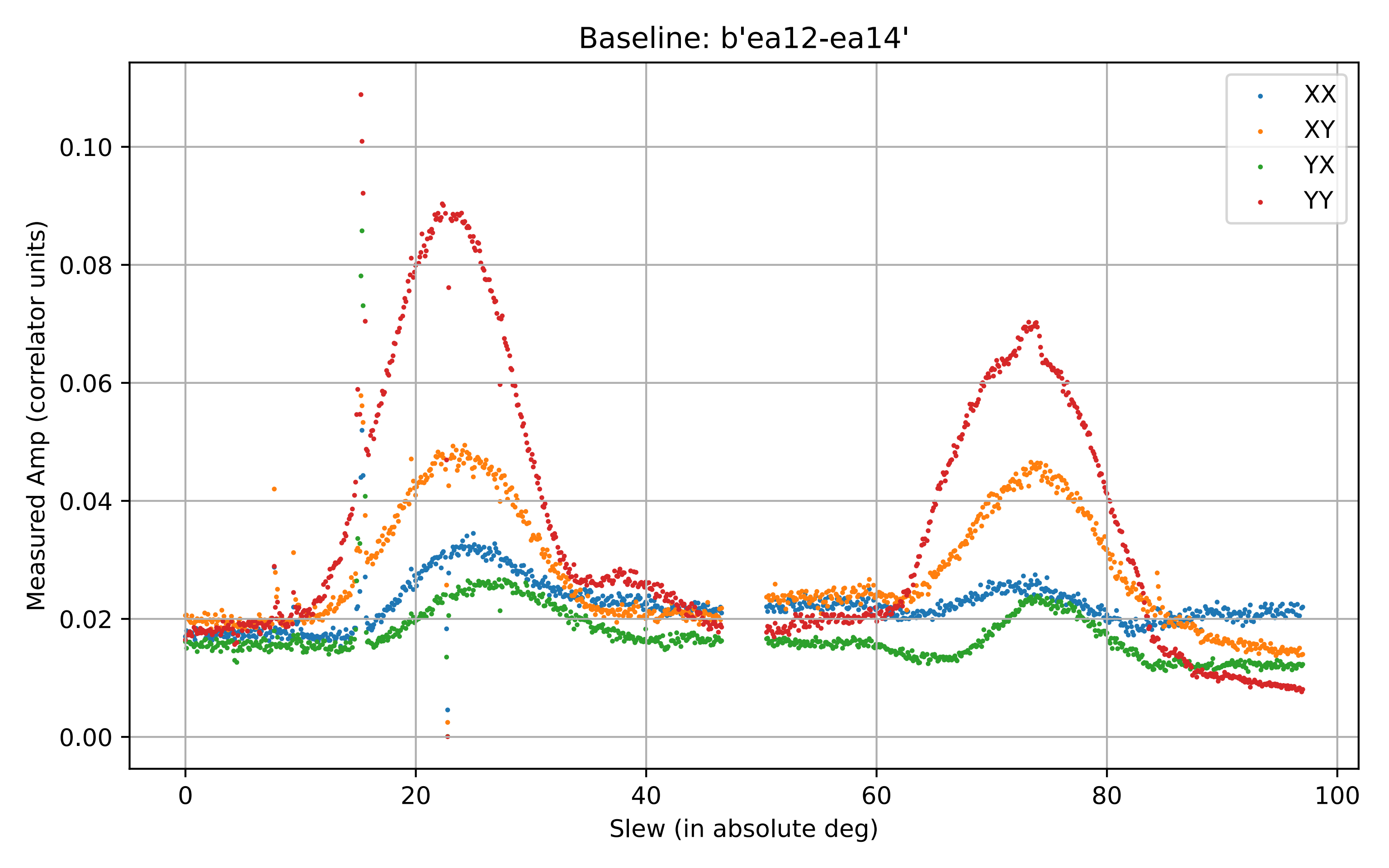

Baseline: b'ea11-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0.5
0
20
40
60
80
100



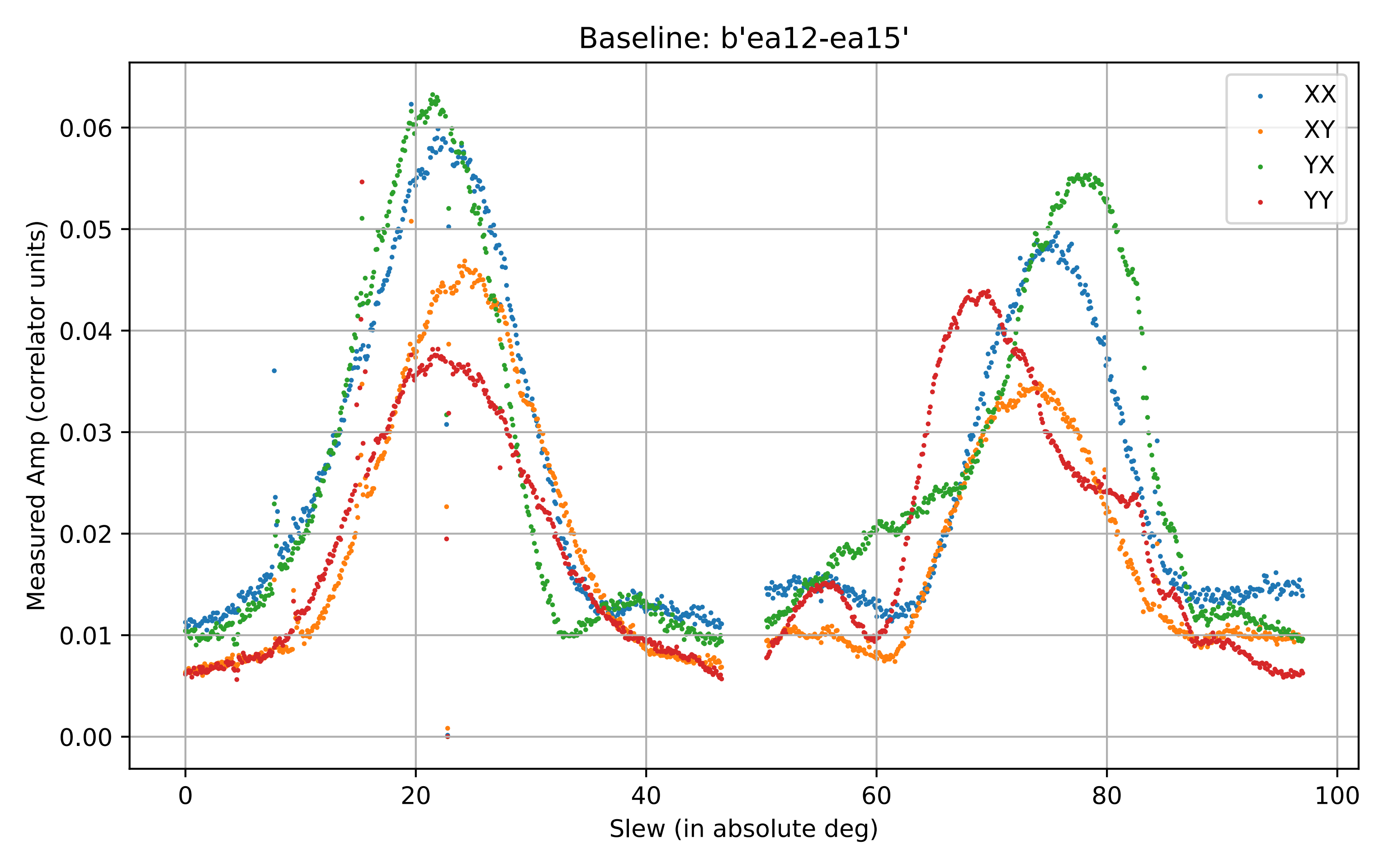
Baseline: b'ea12-ea12'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.5
1.0
1.5
2.0
2.5
0
20
40
60
80
100

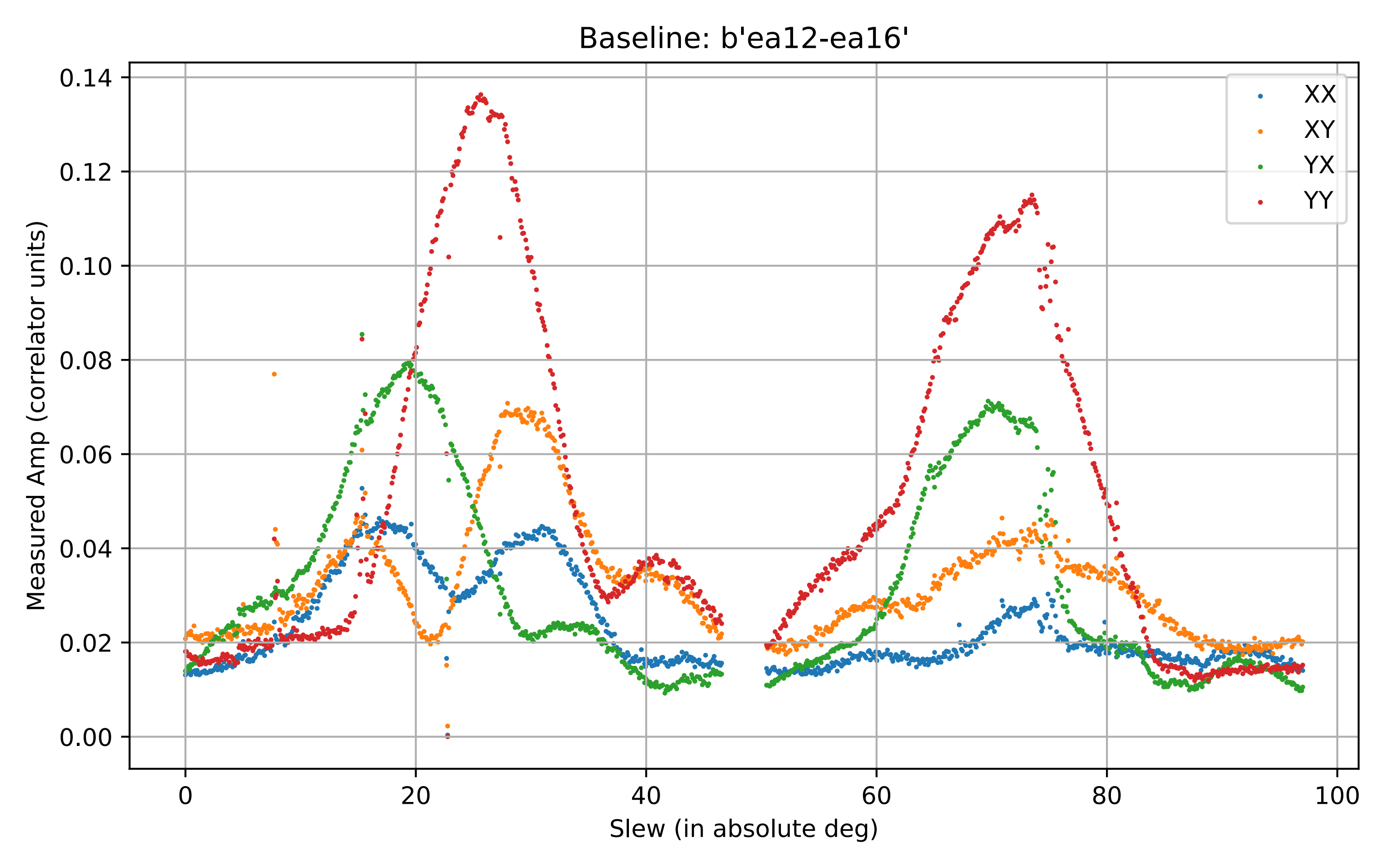


Baseline: b'ea12-ea13'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100

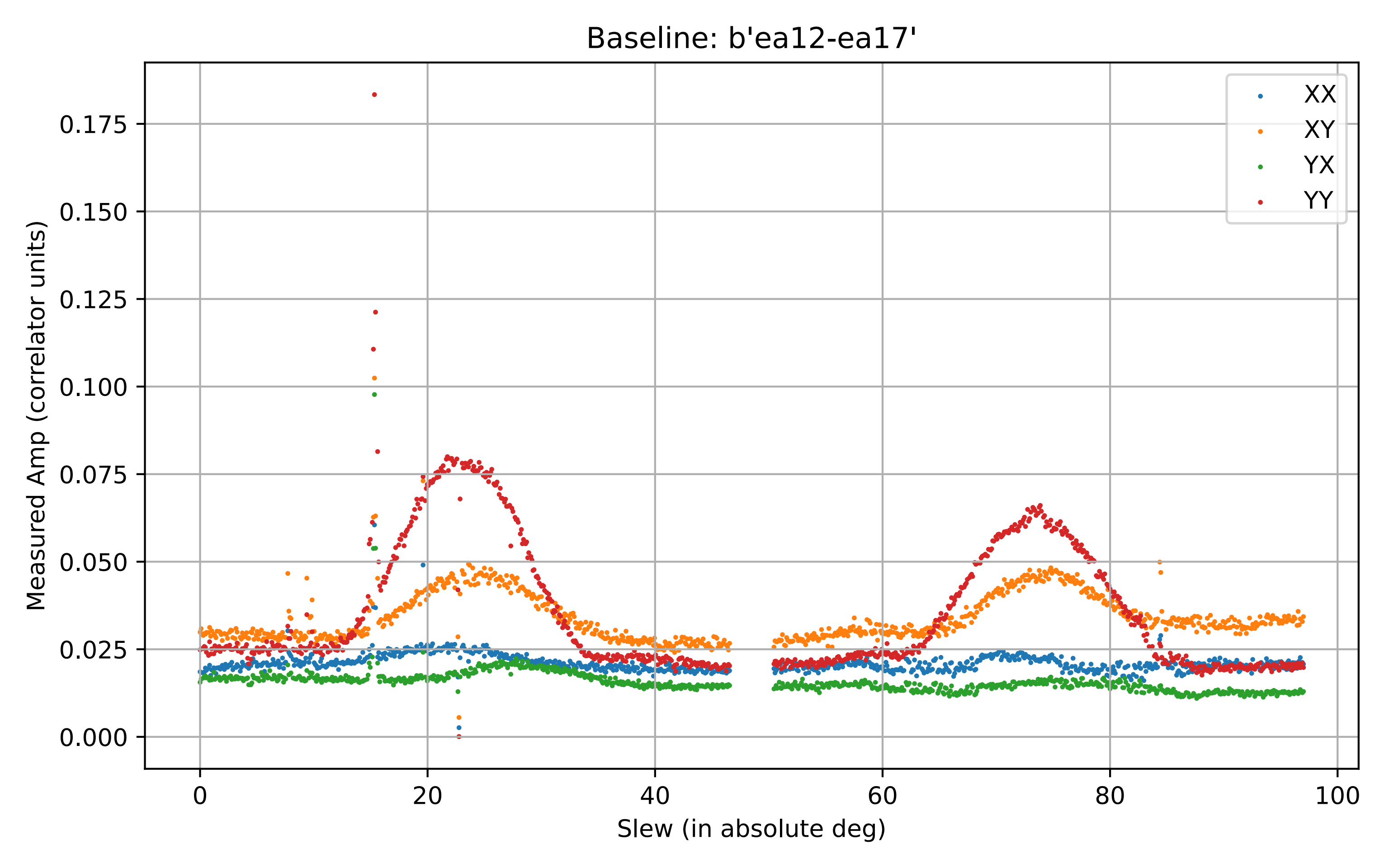


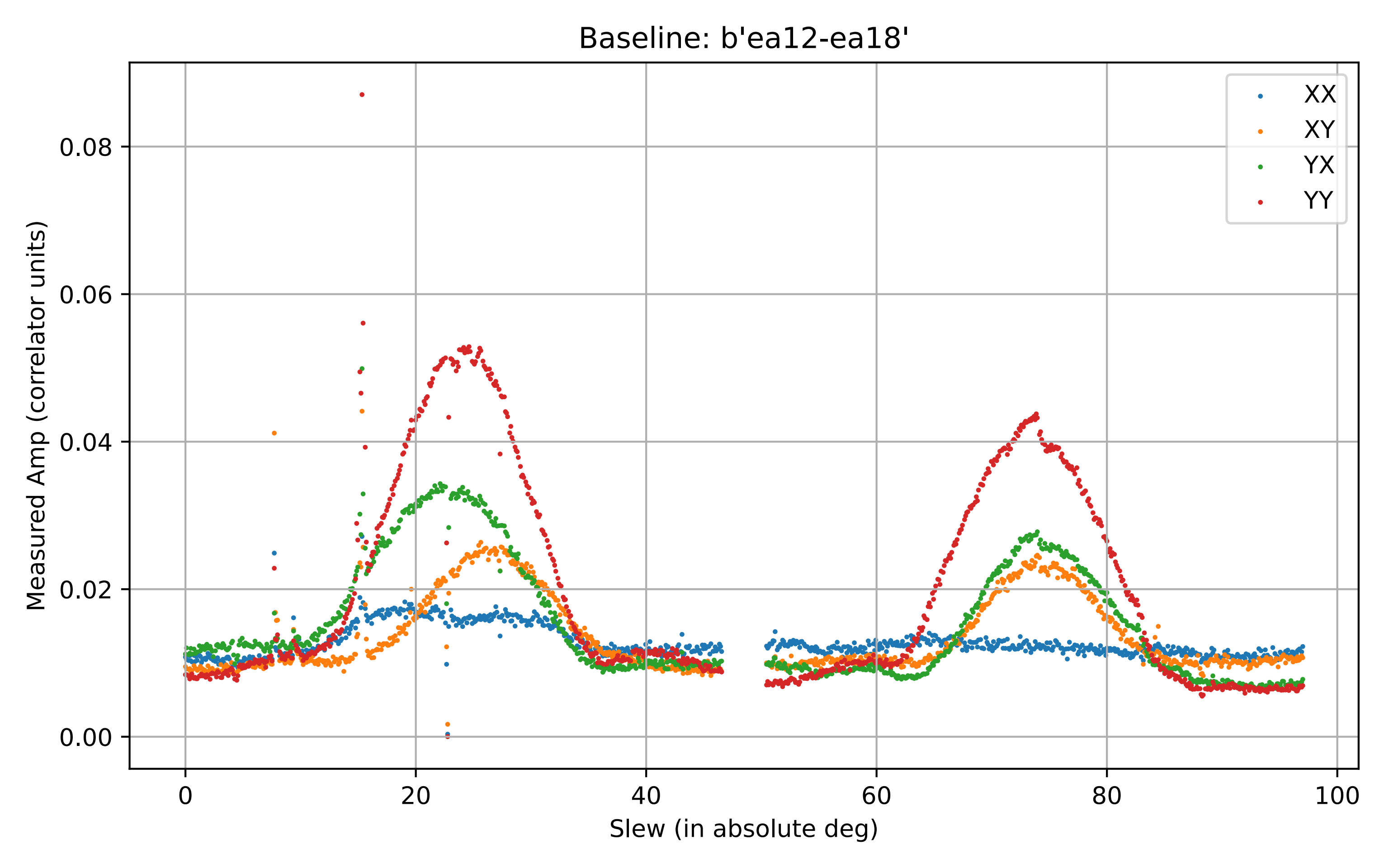
Baseline: b'ea12-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea12-ea15'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
Slew (in absolute deg)
0
20
40
60
80
100

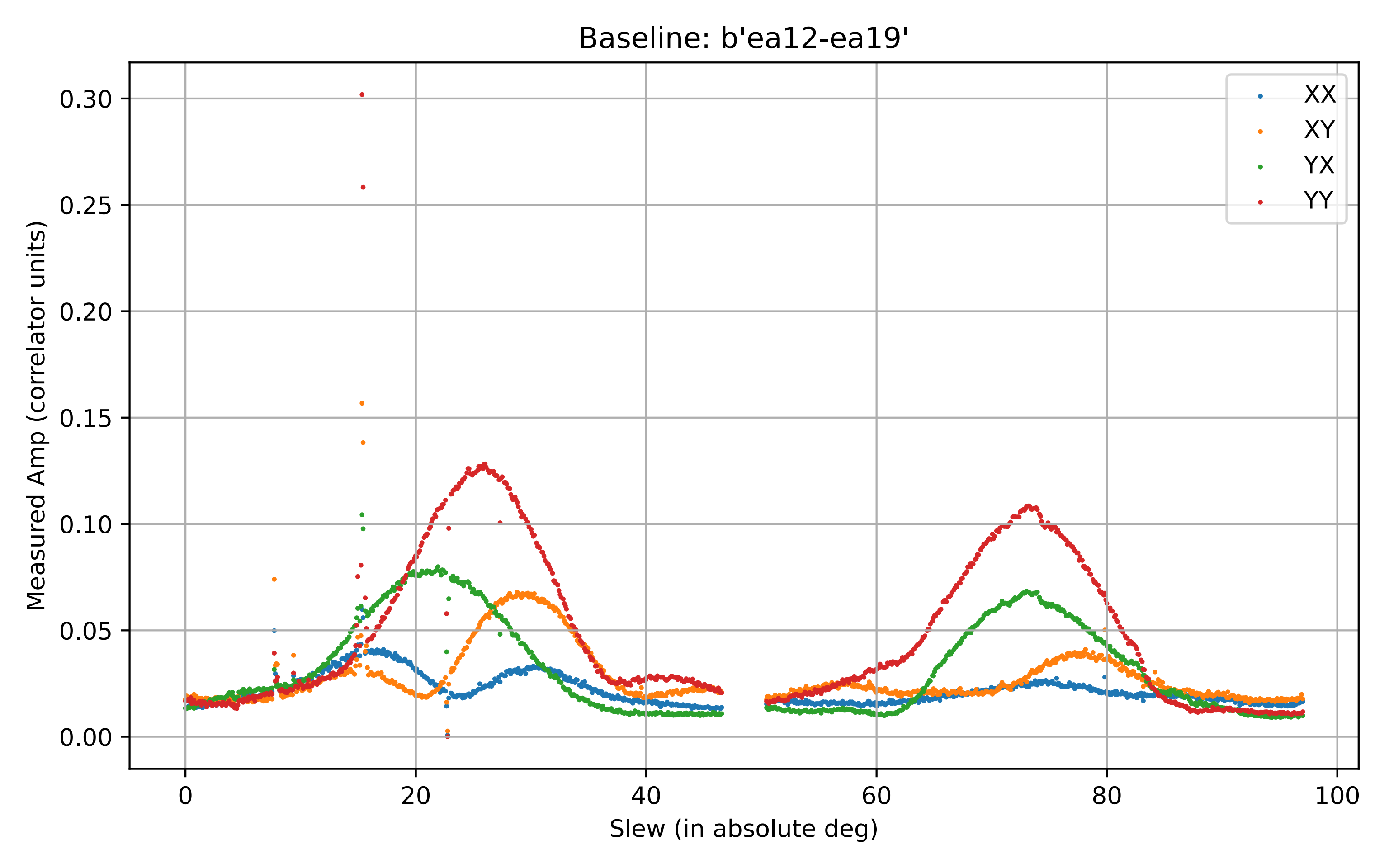


Baseline: b'ea12-ea16'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100

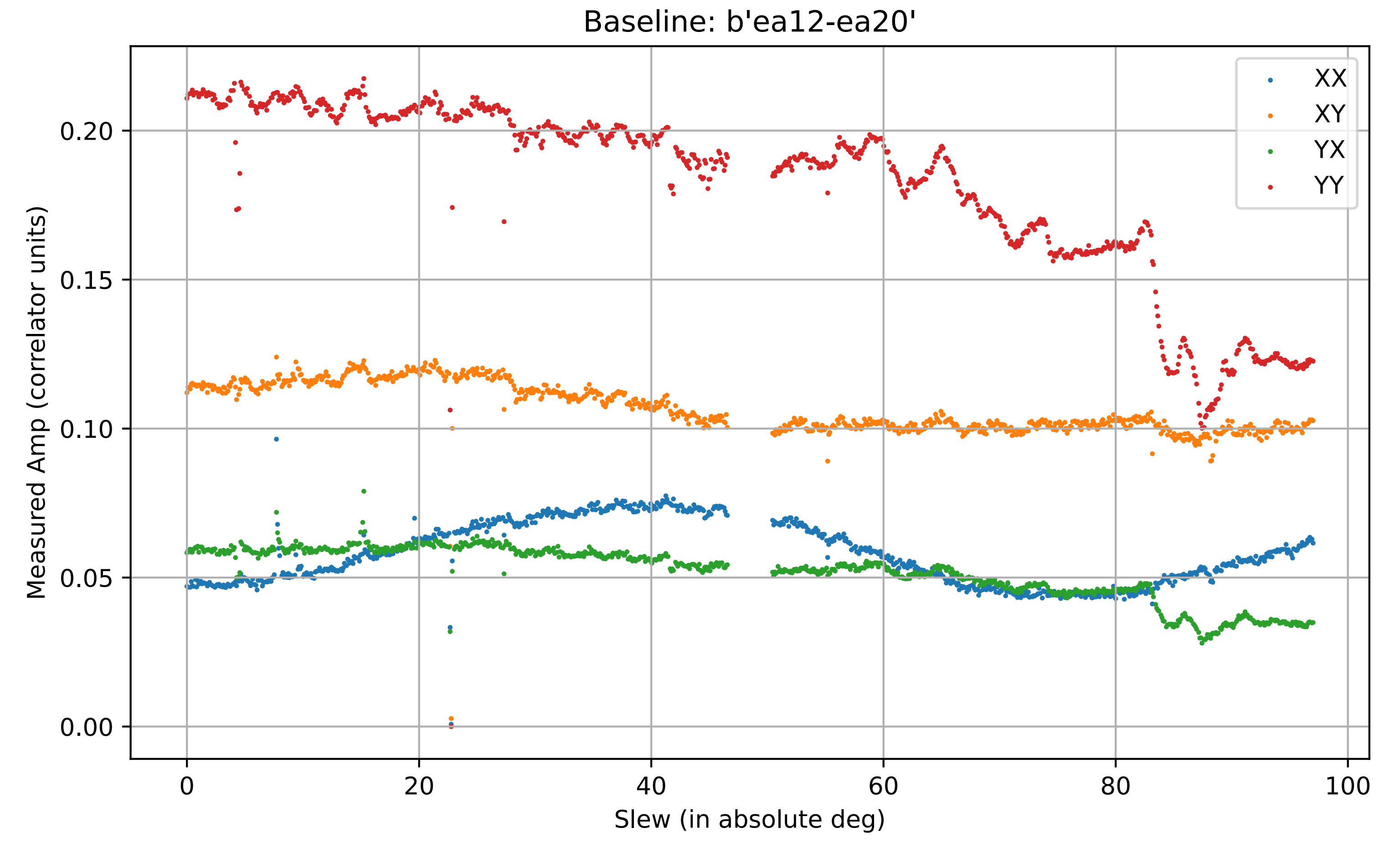

Baseline: b'ea12-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100



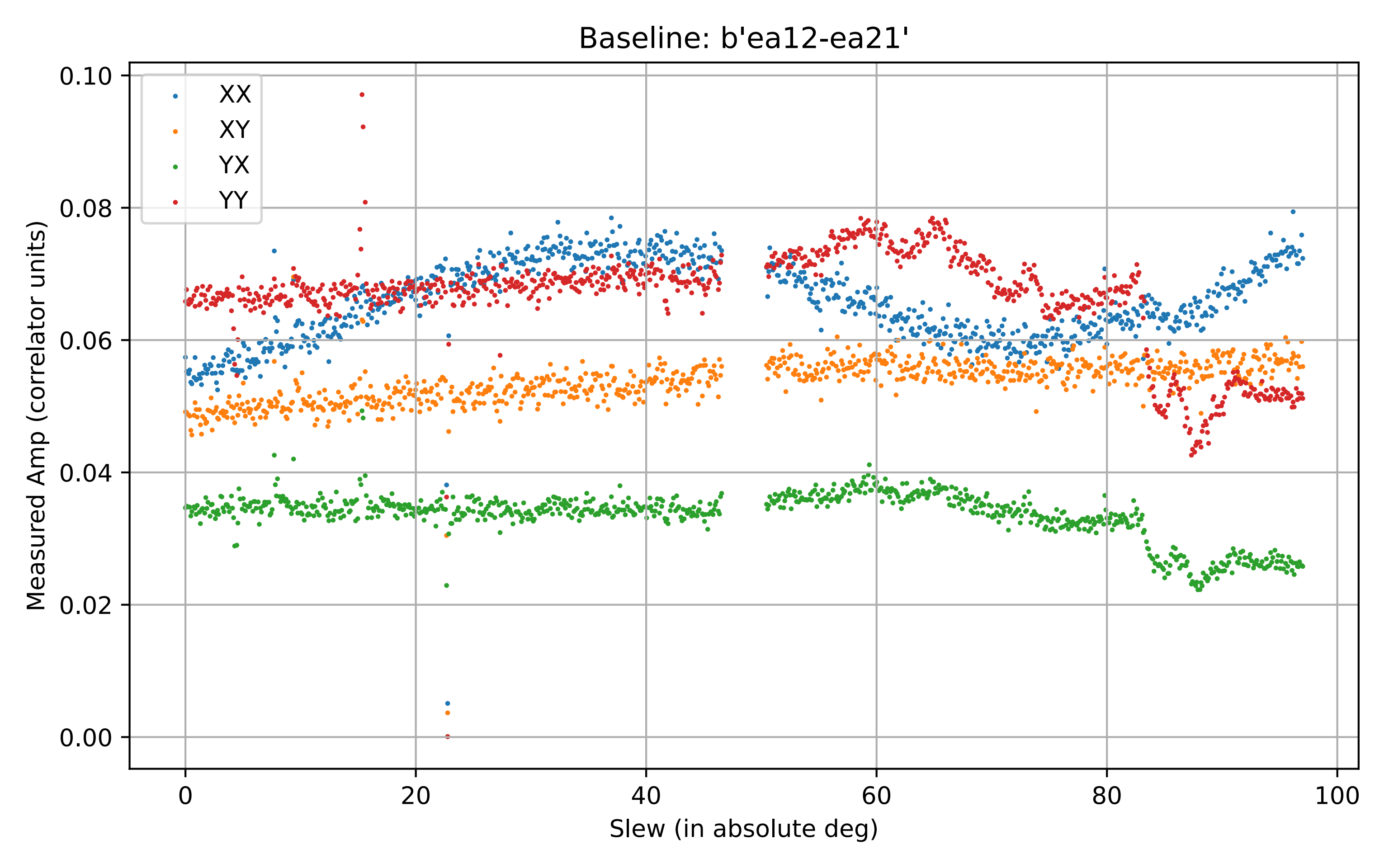
Baseline: b'ea12-ea18'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
Slew (in absolute deg)



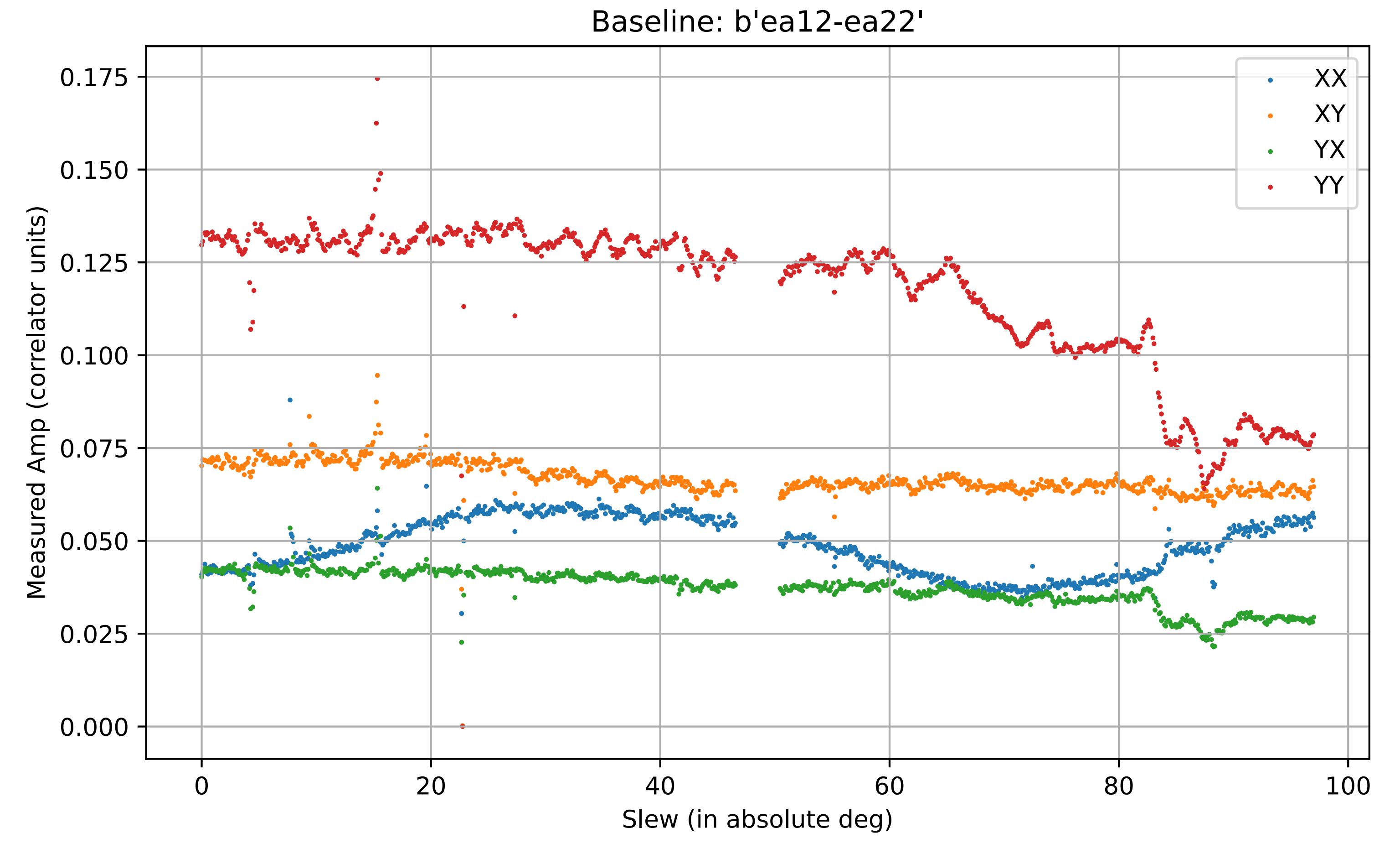
Baseline: b'ea12-ea19'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100
Slew (in absolute deg)

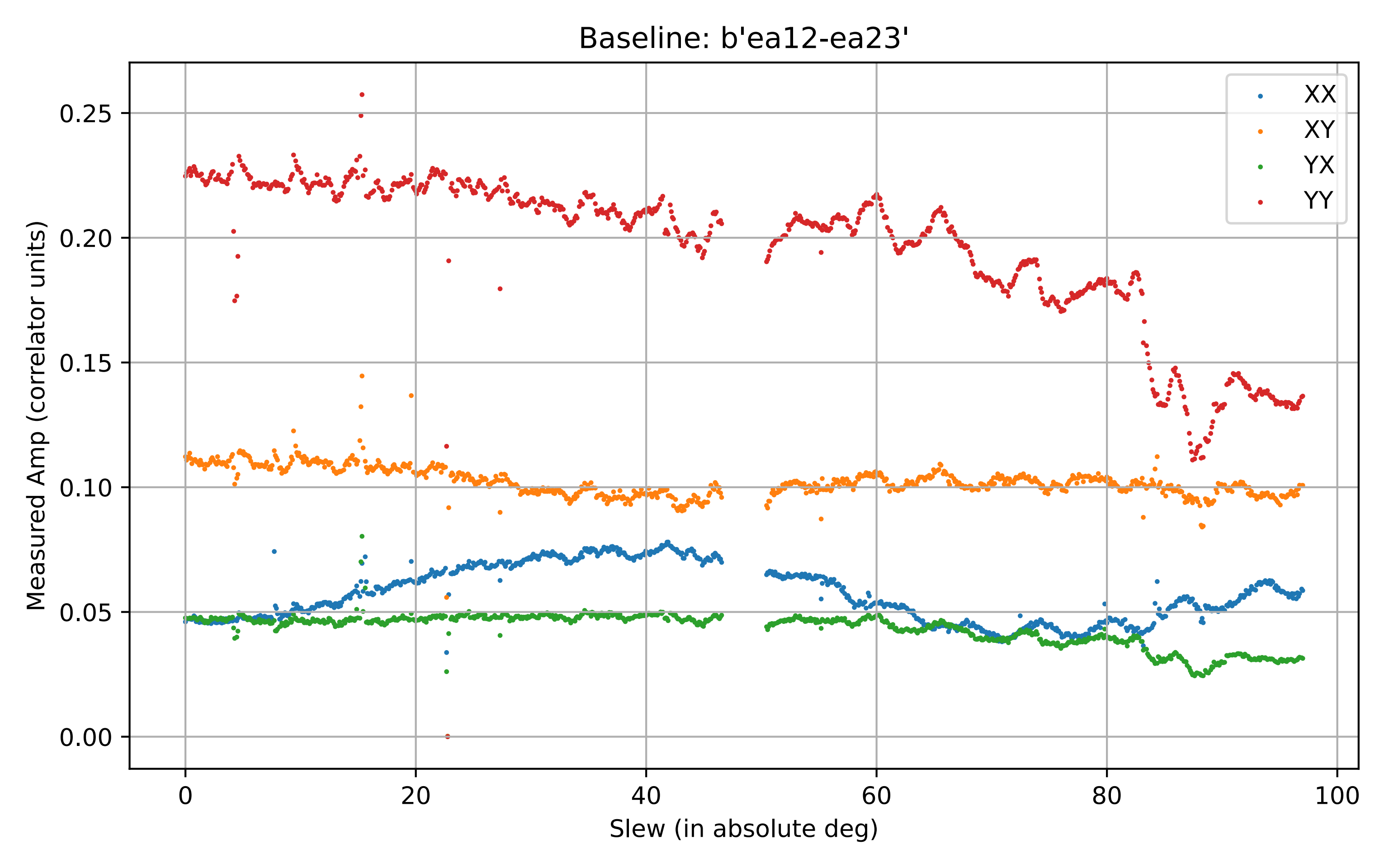


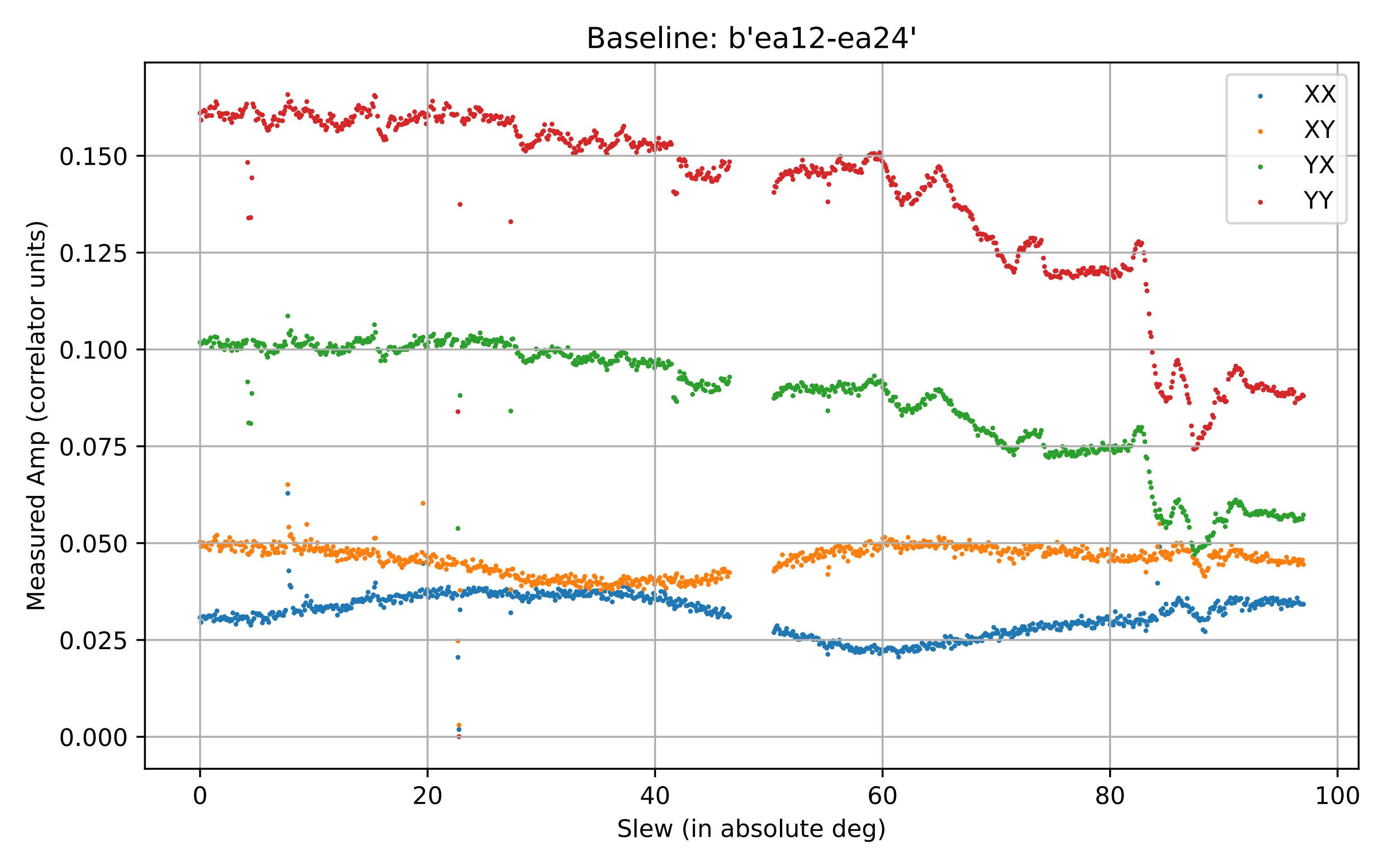
Baseline: b'ea12-ea20'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100

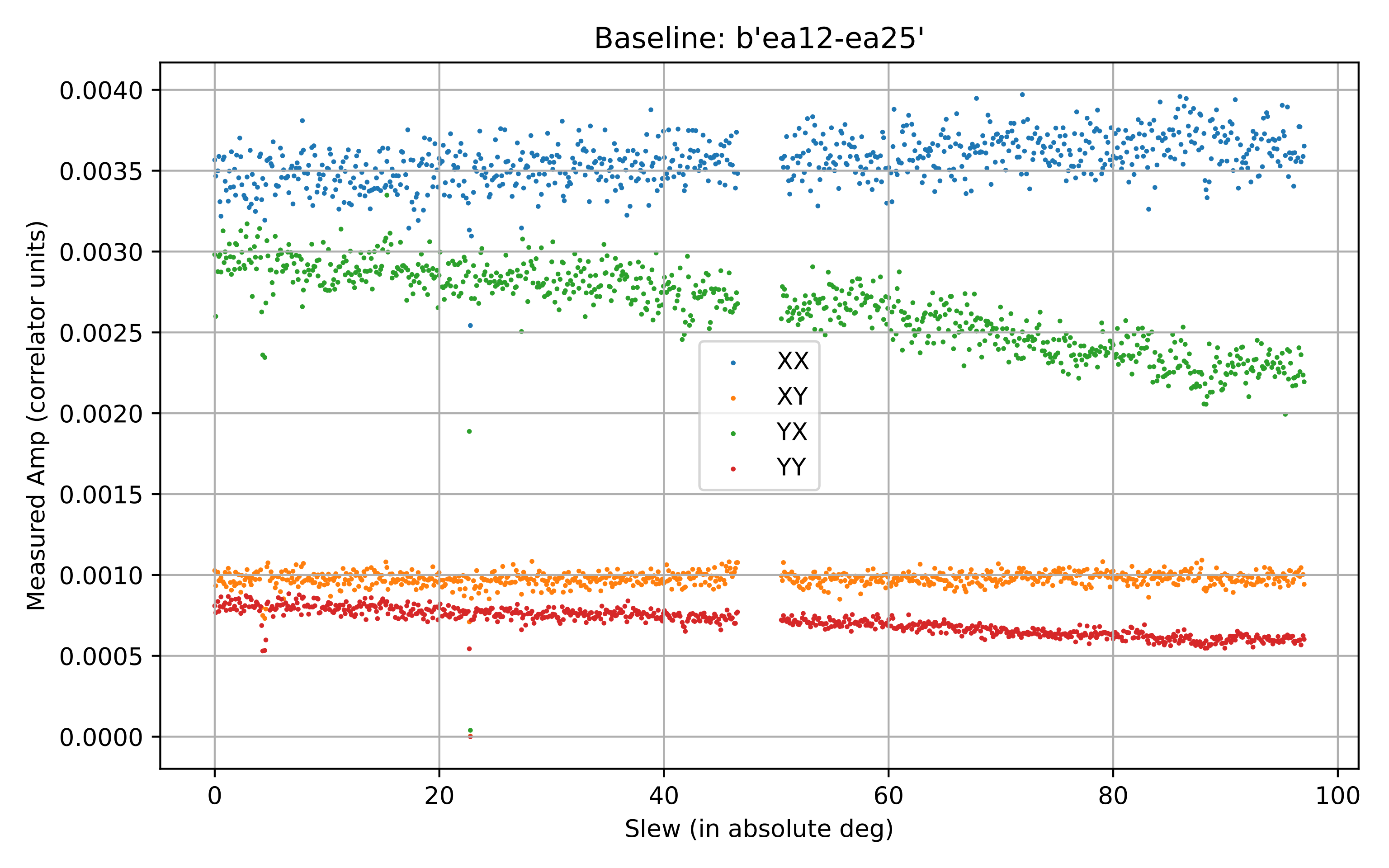


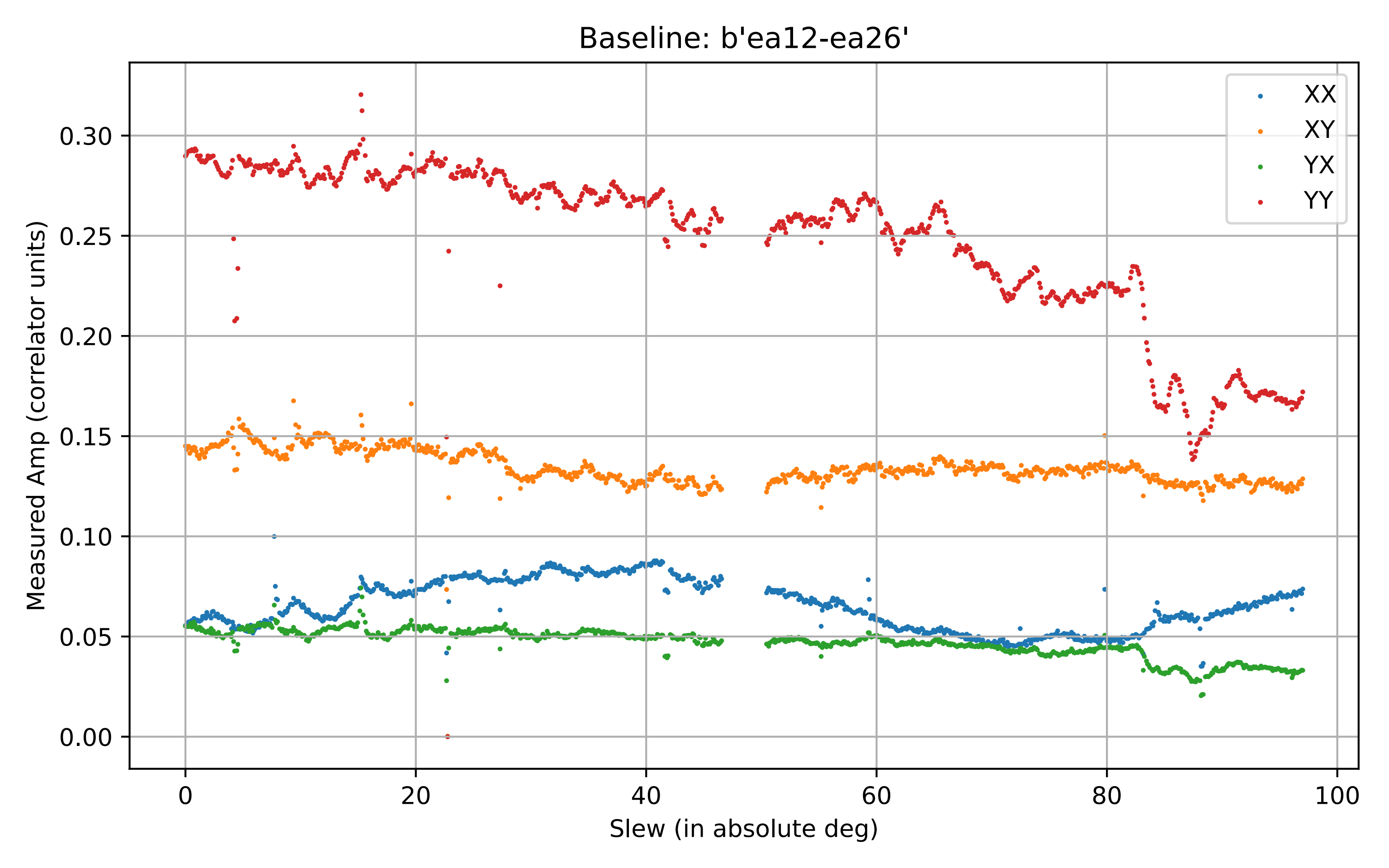
Baseline: b'ea12-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100


Baseline: b'ea12-ea22'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100

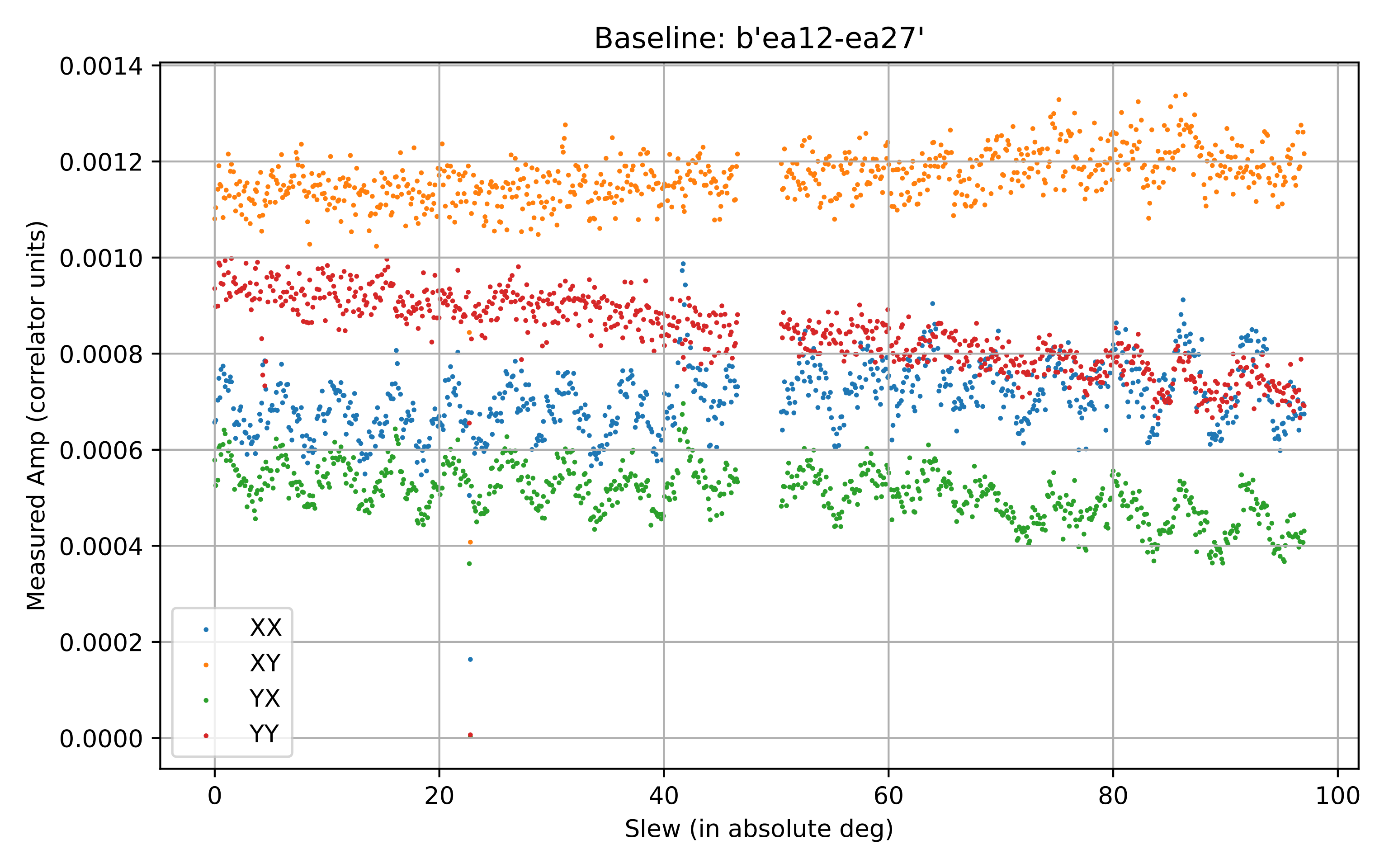

Baseline: b'ea12-ea23'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100


Baseline: b'ea12-ea24'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0
20
40
60
80
100
Slew (in absolute deg)

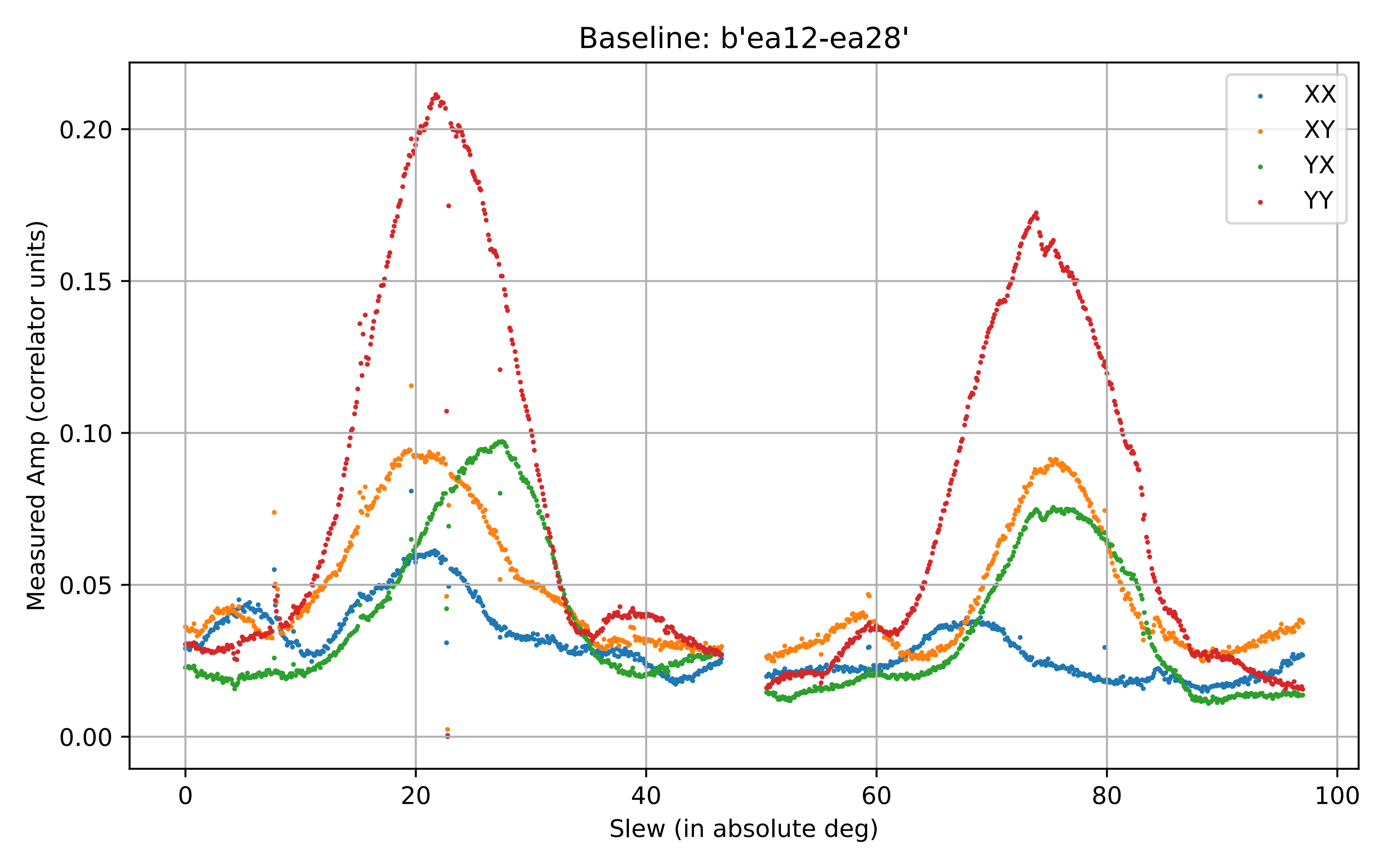

Baseline: b'ea12-ea25'
Measured Amp (correlator units)
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



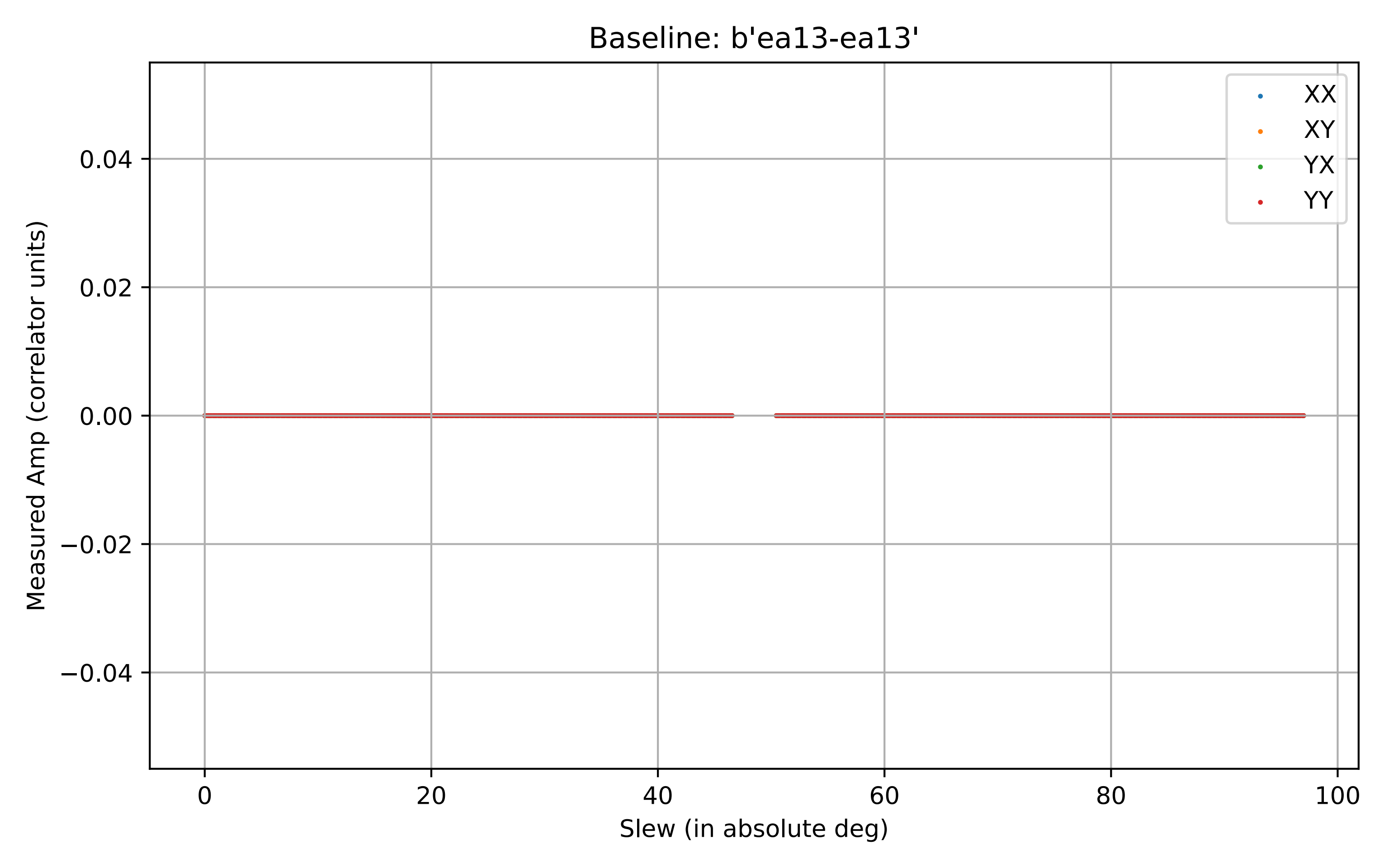
Baseline: b'ea12-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
20
40
60
80
100



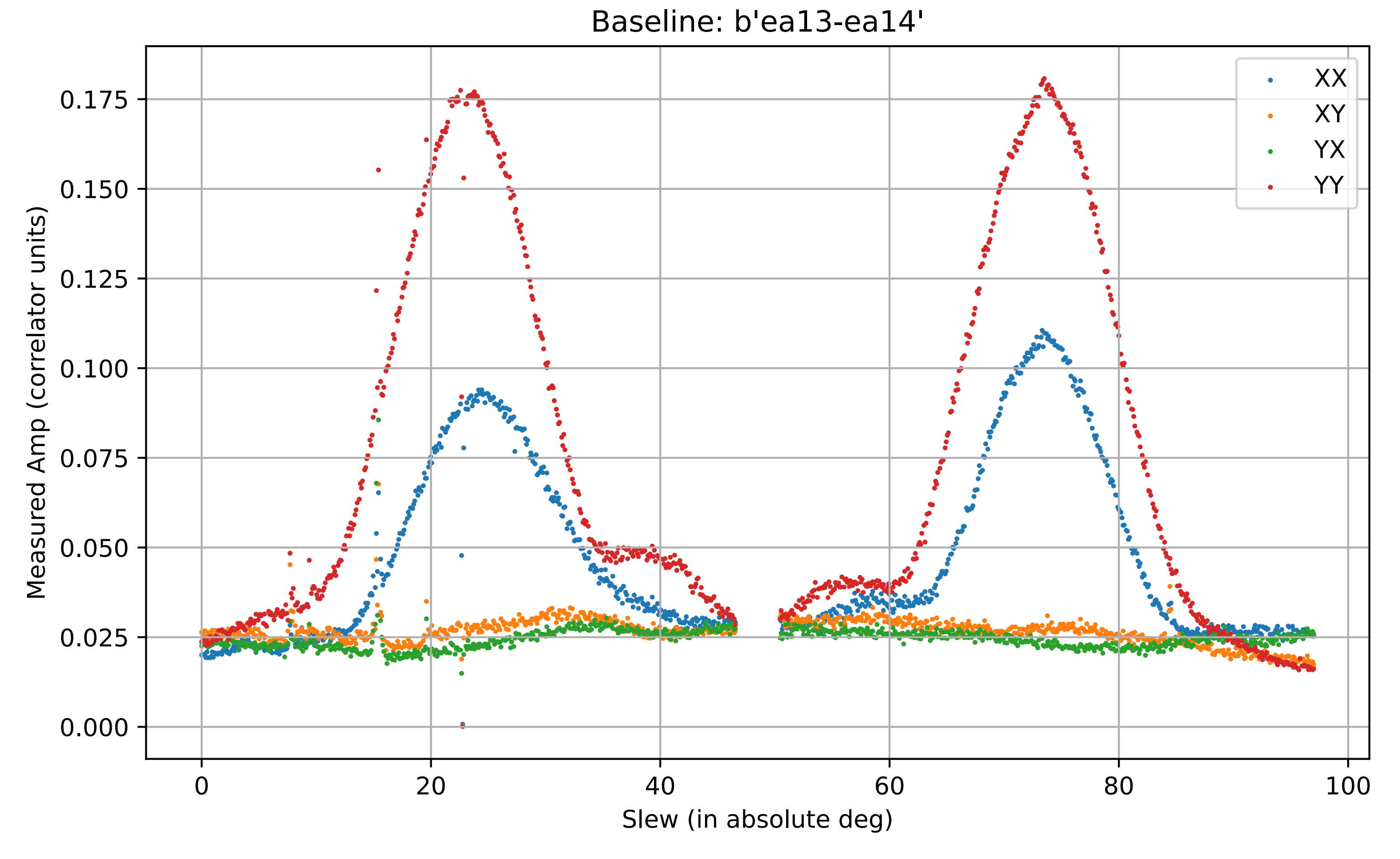
Baseline: b'ea12-ea27'
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
Measured Amp (correlator units)
XX
XY
YX
YY
0
20
40
60
80
100
Slew (in absolute deg)

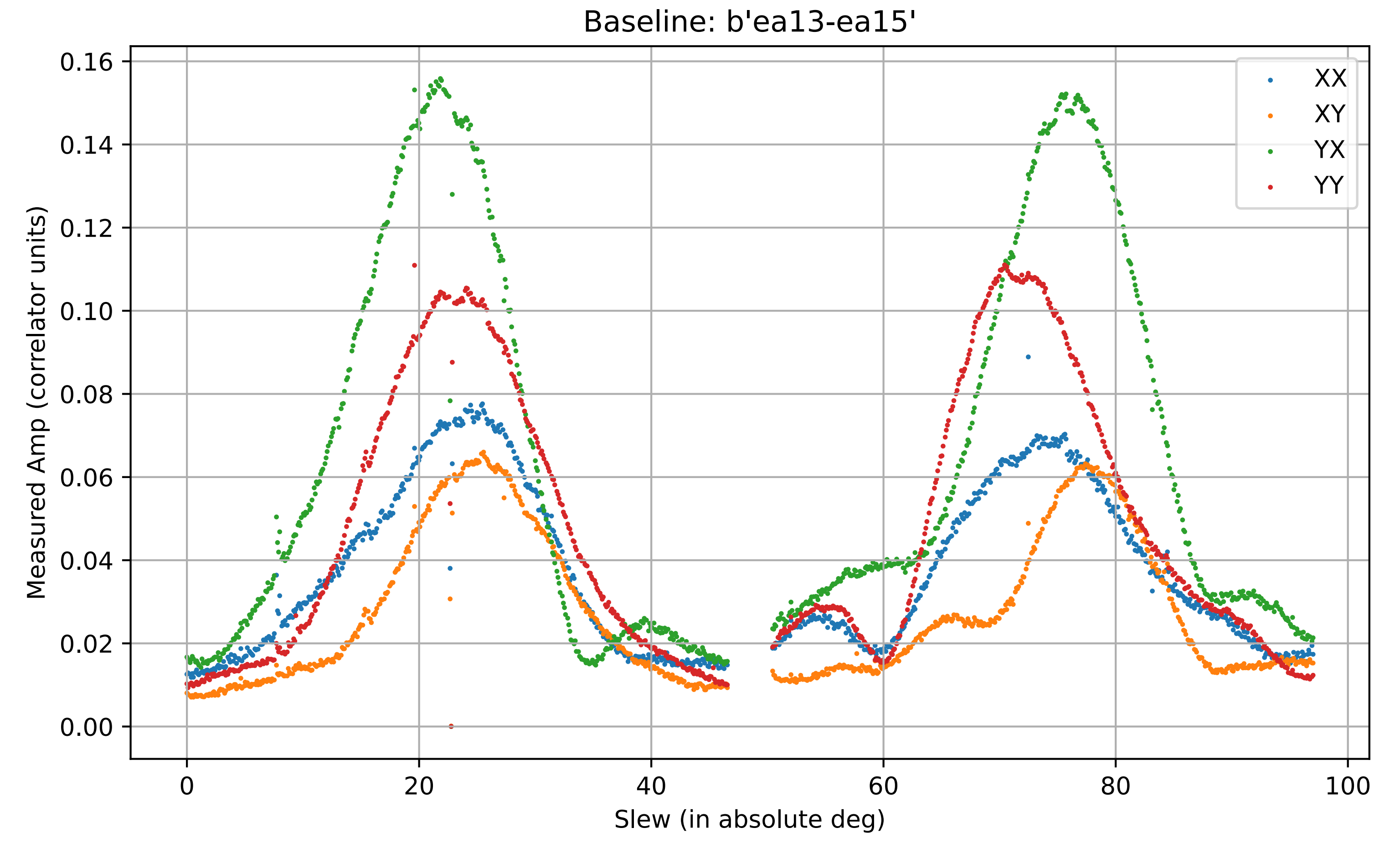


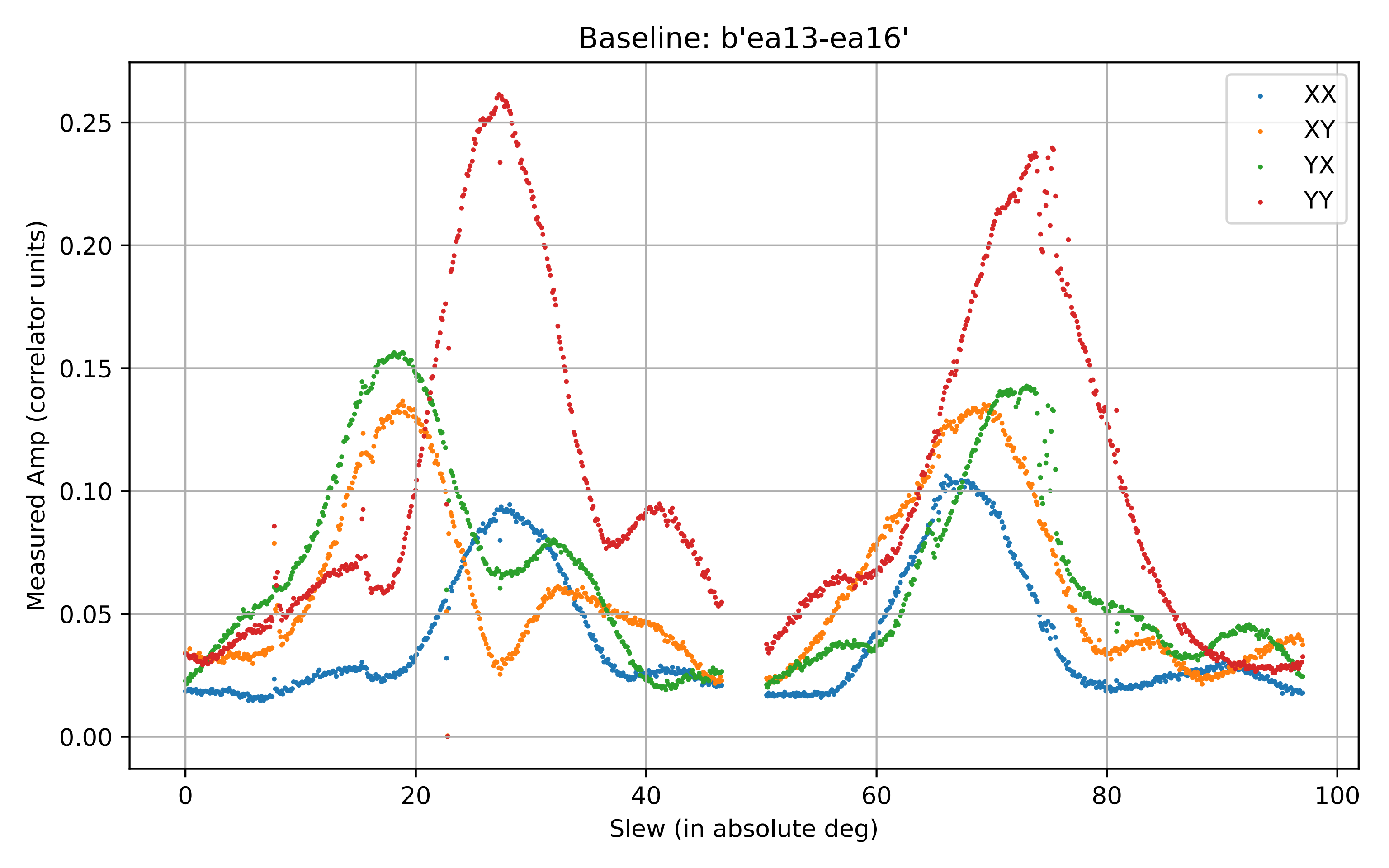
Baseline: b'ea12-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100

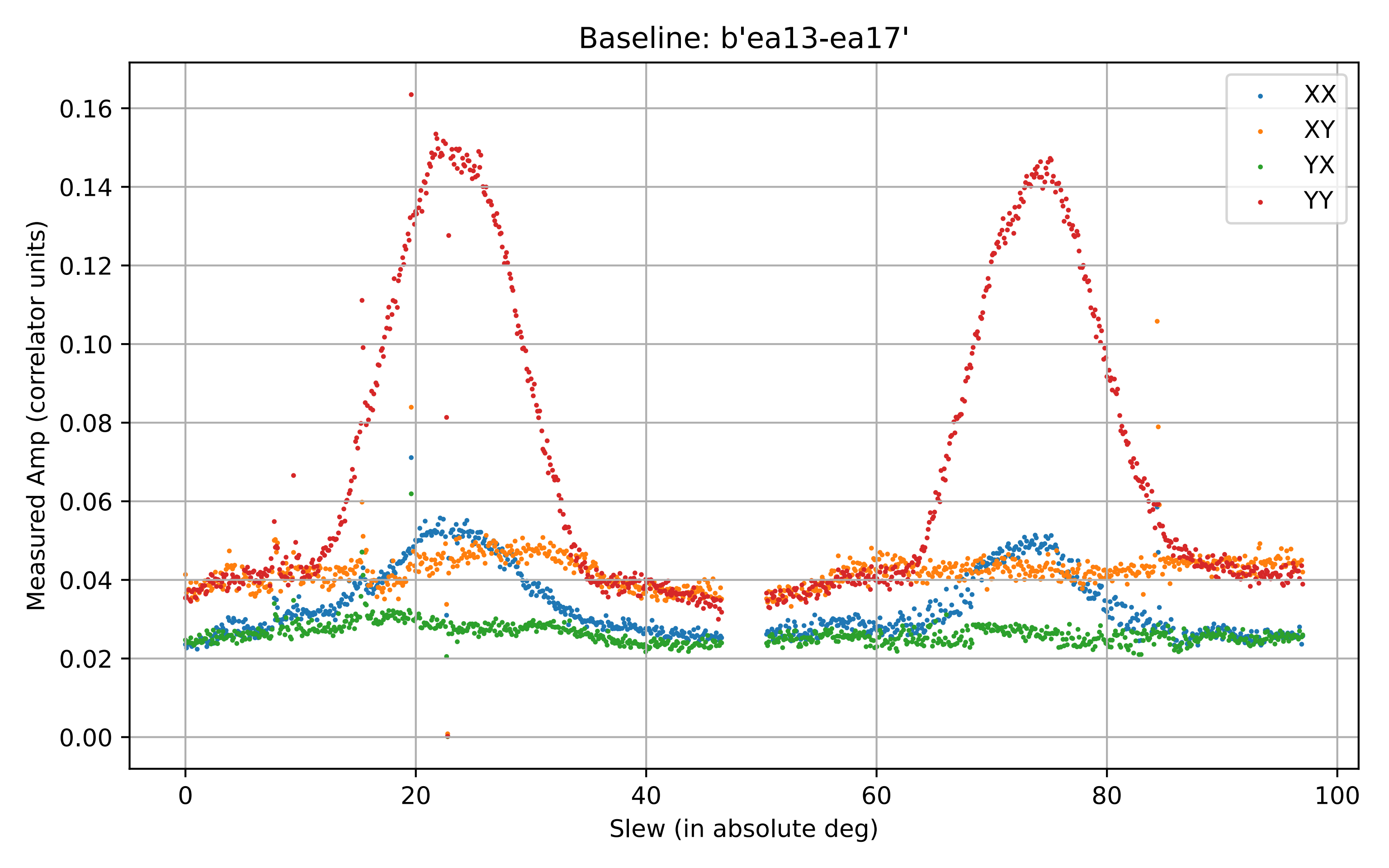


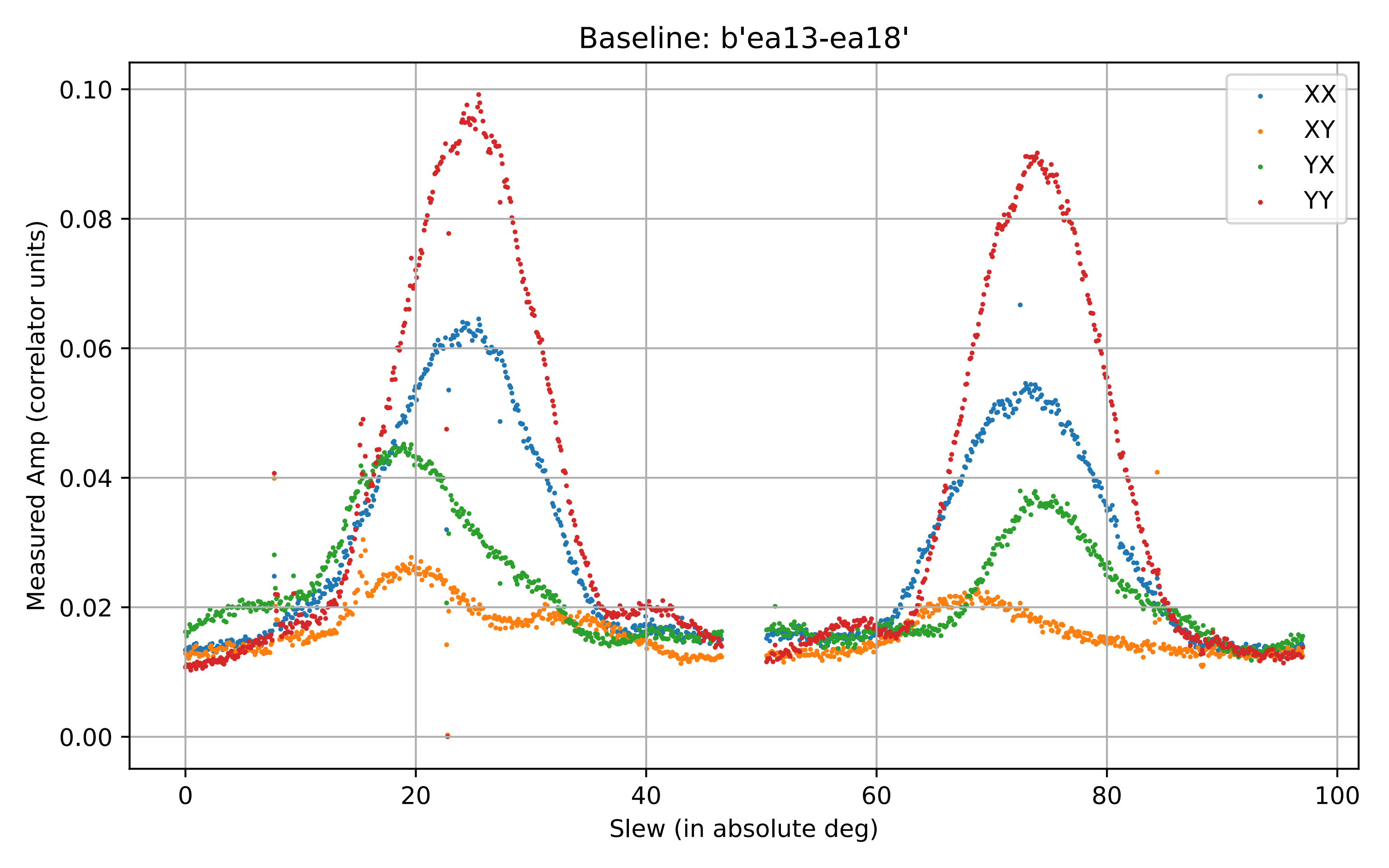
Baseline: b'ea13-ea13'
XX
XY
YX
YY
0.04
0.02
0.00
−0.02
−0.04
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea13-ea14'
Measured Amp (correlator units)
Slew (in absolute deg)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
20
40
60
80
100
XX
XY
YX
YY

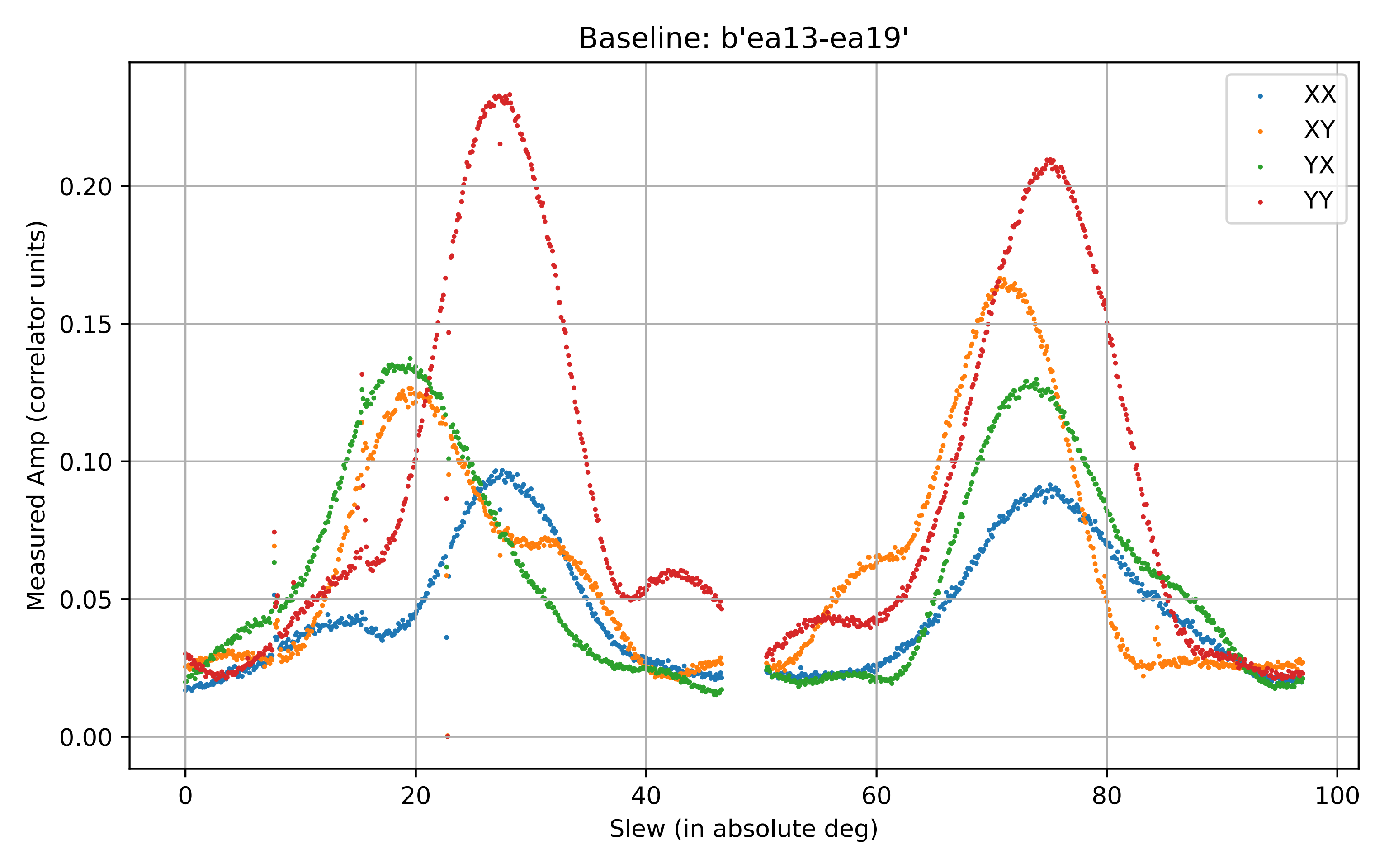

Baseline: b'ea13-ea15'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100


Baseline: b'ea13-ea16'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)

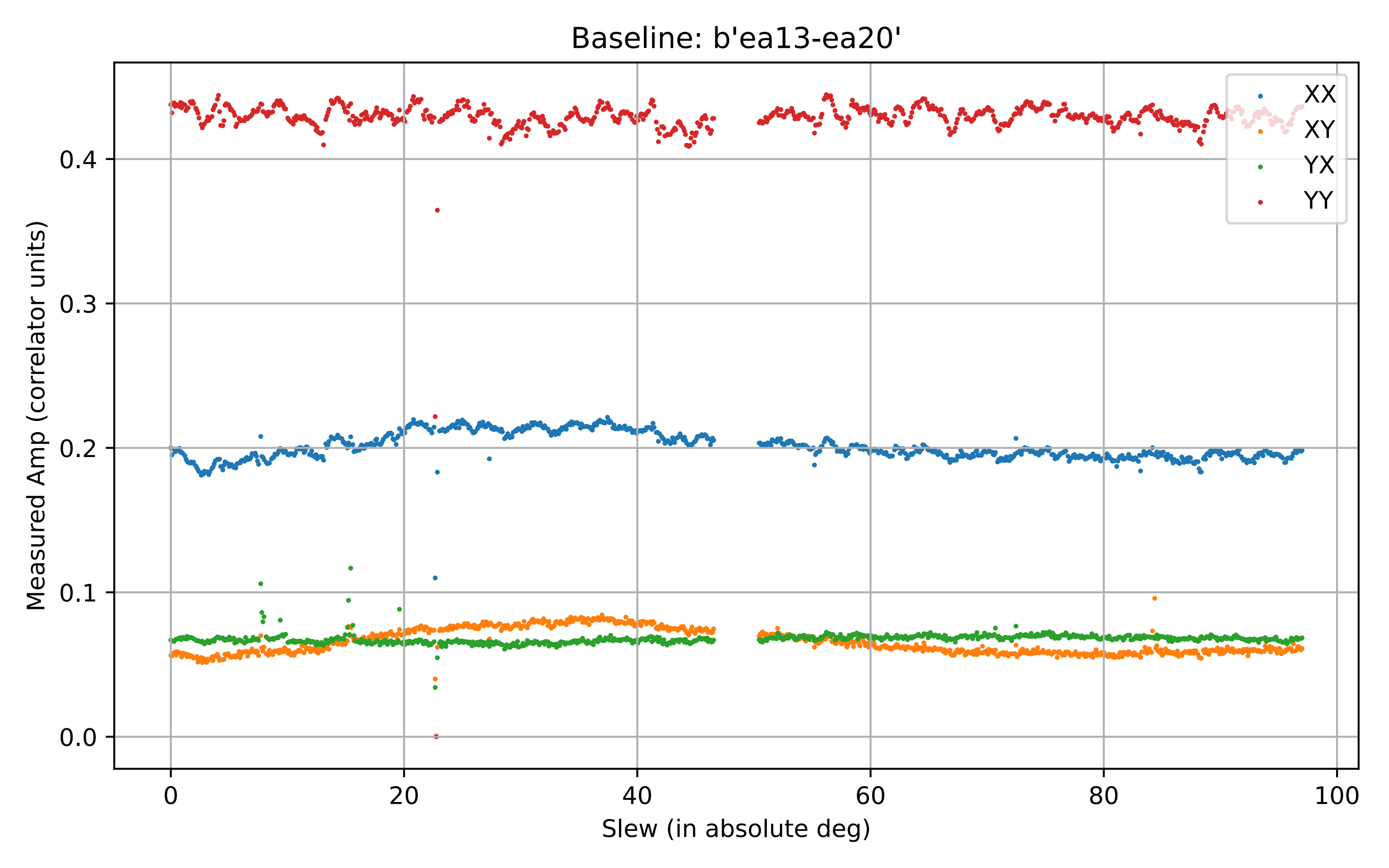

Baseline: b'ea13-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100

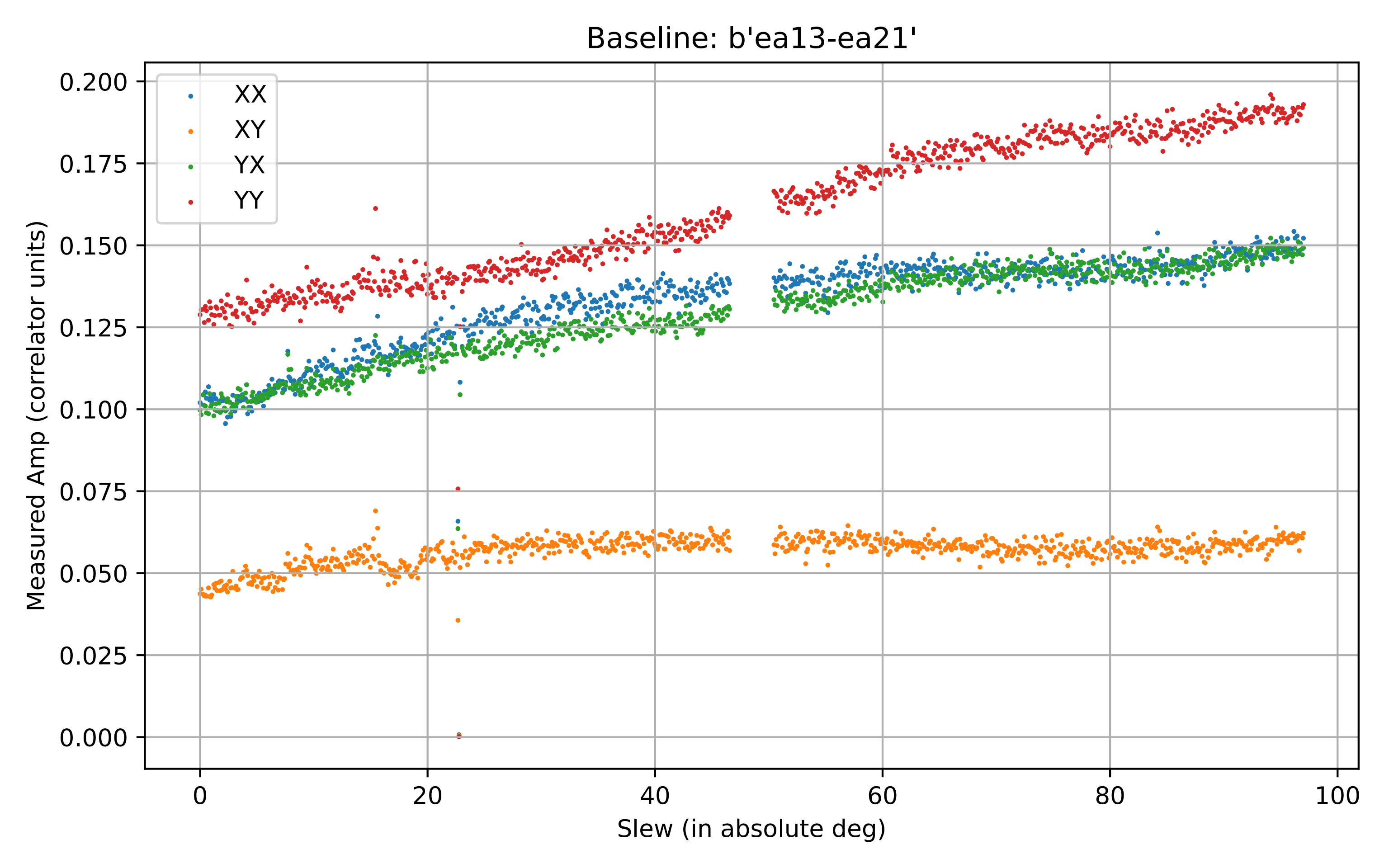


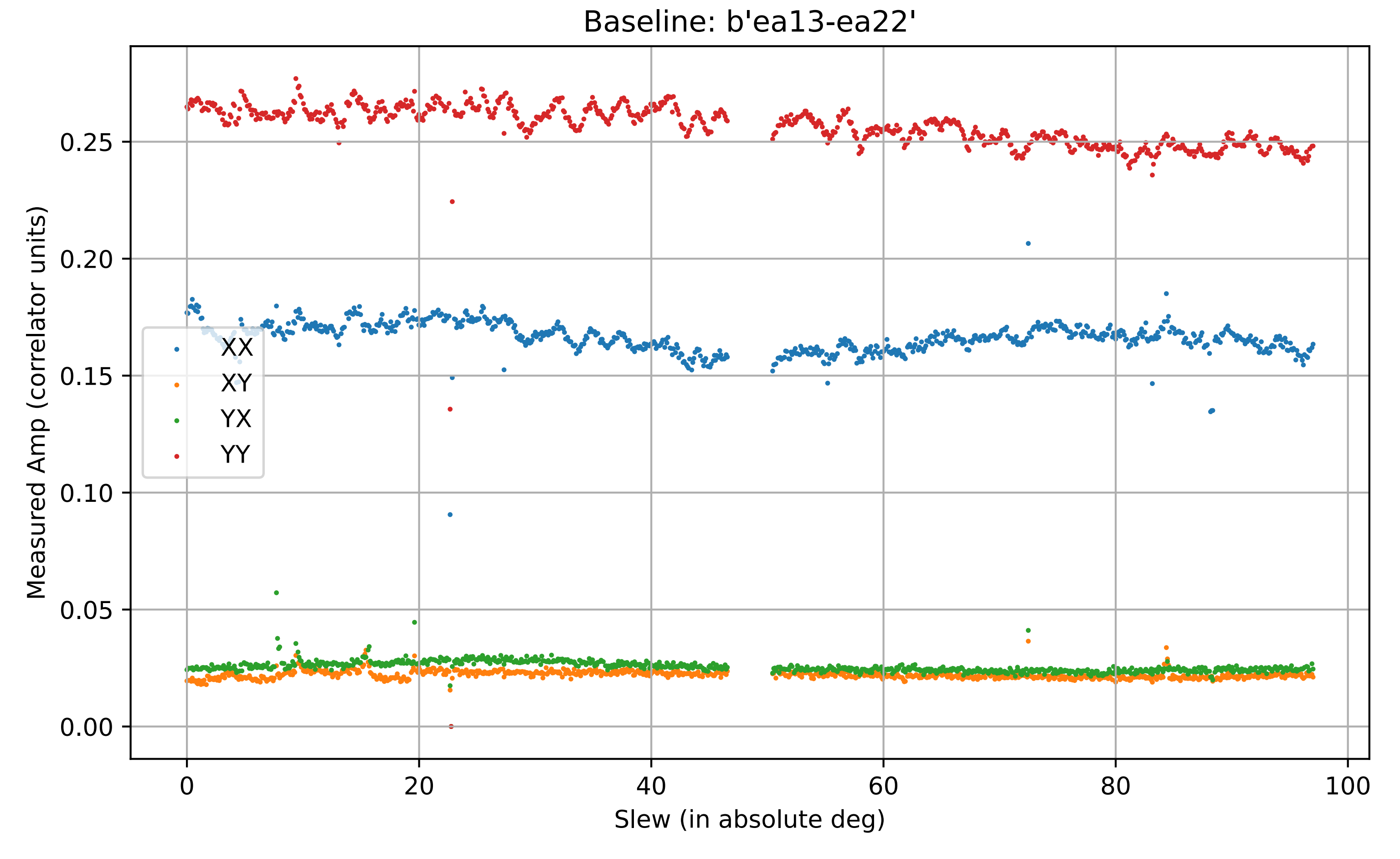
Baseline: b'ea13-ea18'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

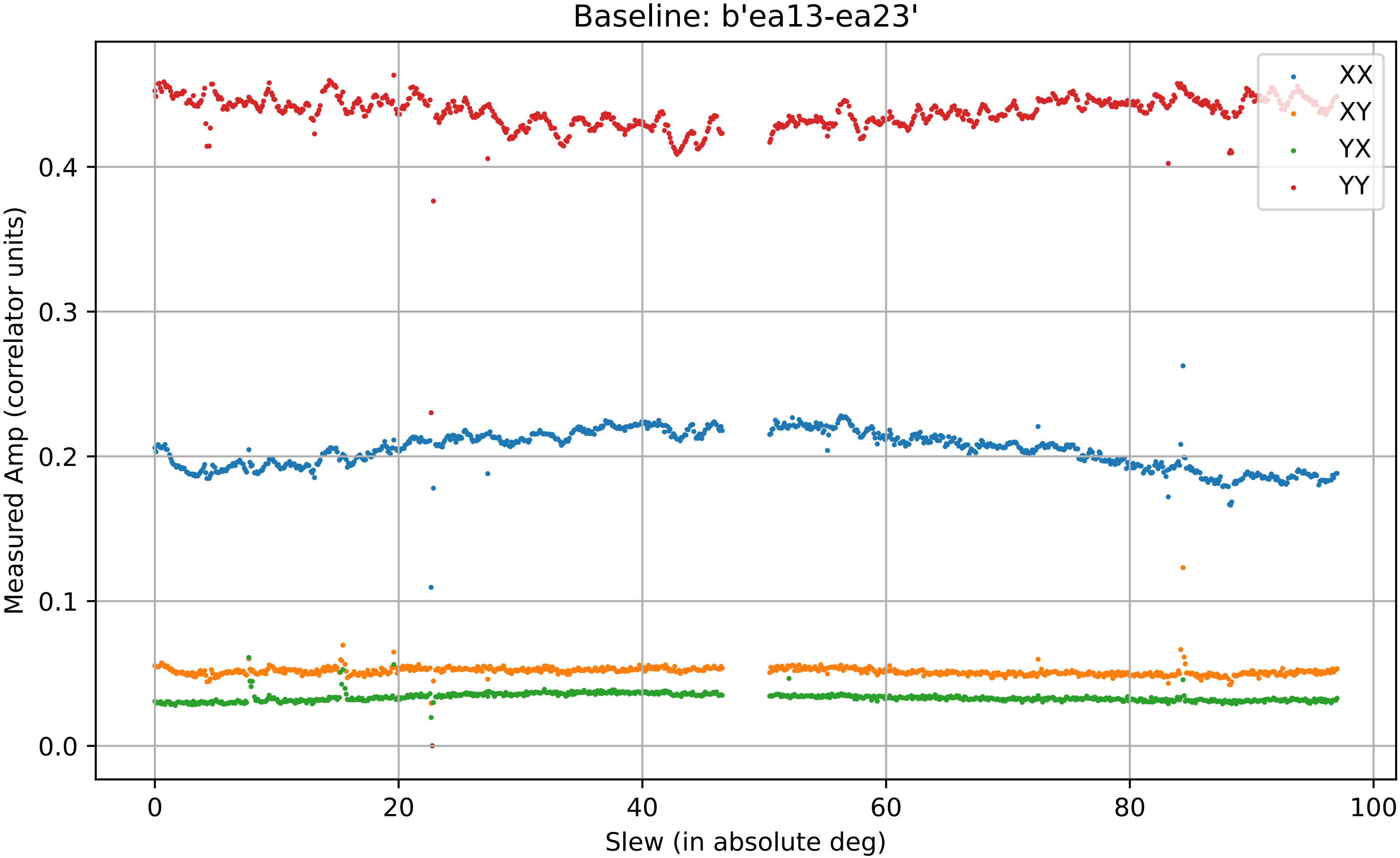


Baseline: b'ea13-ea19'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0
20
40
60
80
100
Slew (in absolute deg)

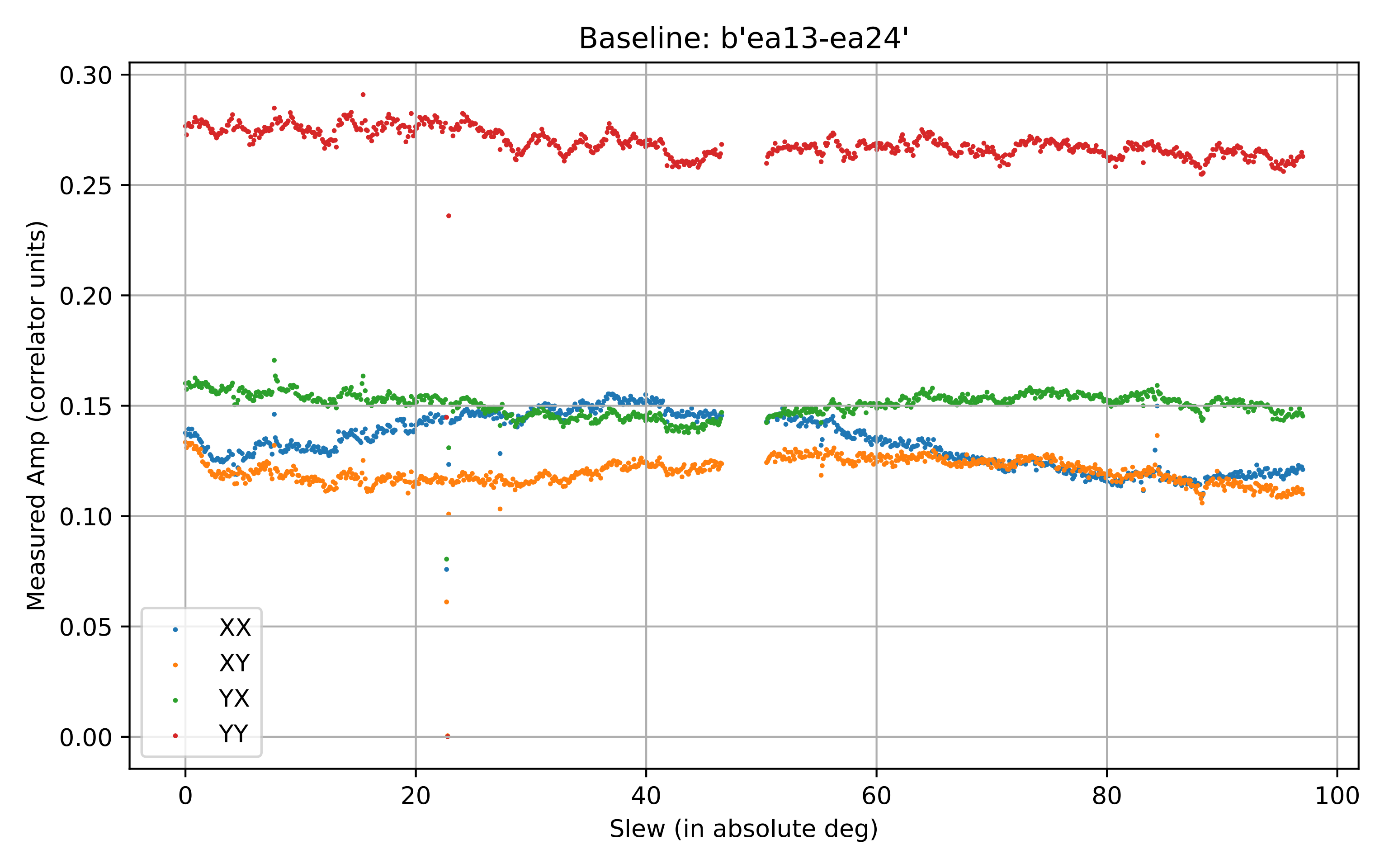

Baseline: b'ea13-ea20'
XX
XY
YX
YY
0.4
0.3
0.2
0.1
0.0
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)

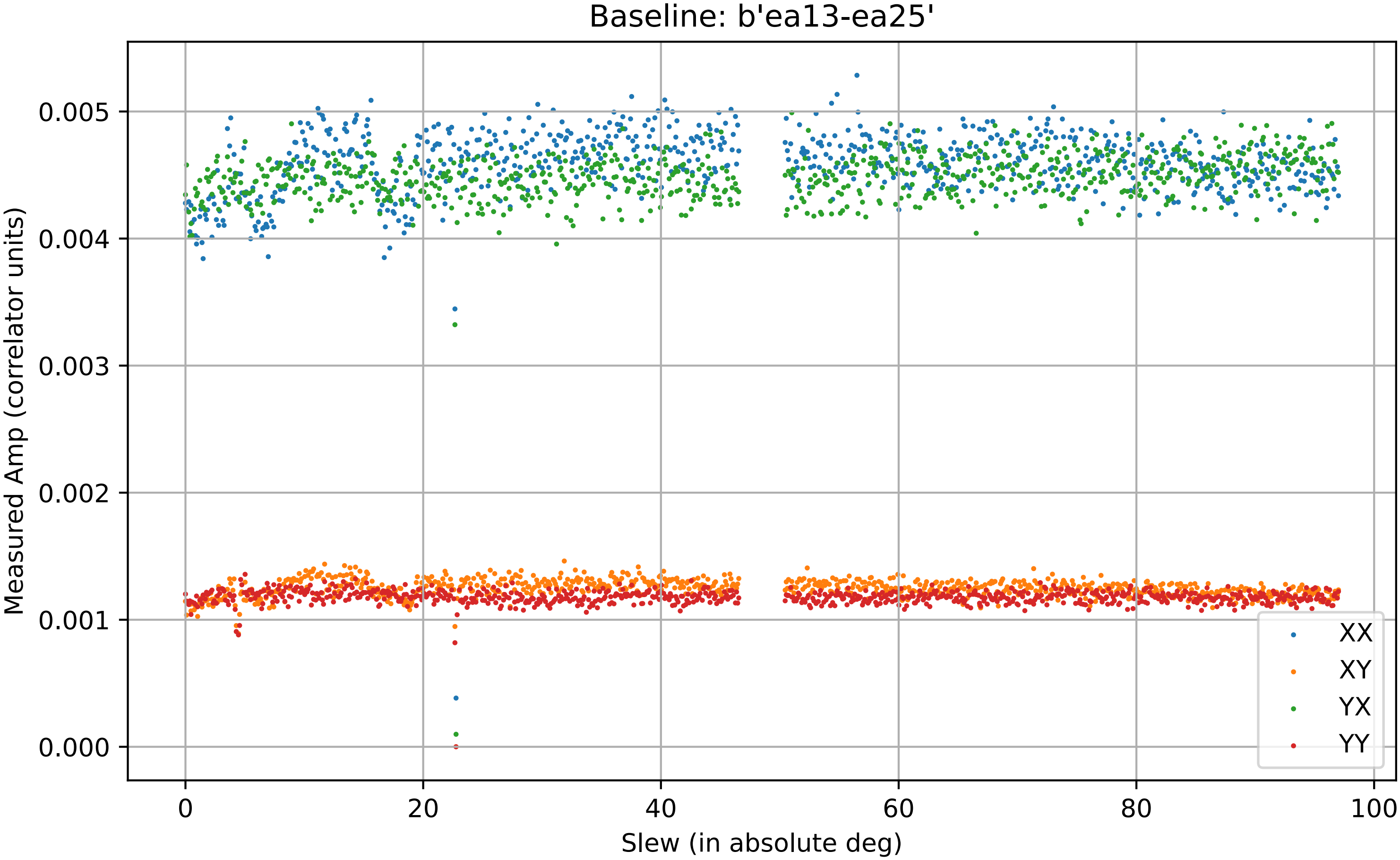

Baseline: b'ea13-ea21'
XX
XY
YX
YY
Measured Amp (correlator units)
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea13-ea22'
Measured Amp (correlator units)
0.00
0.05
0.10
0.15
0.20
0.25
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

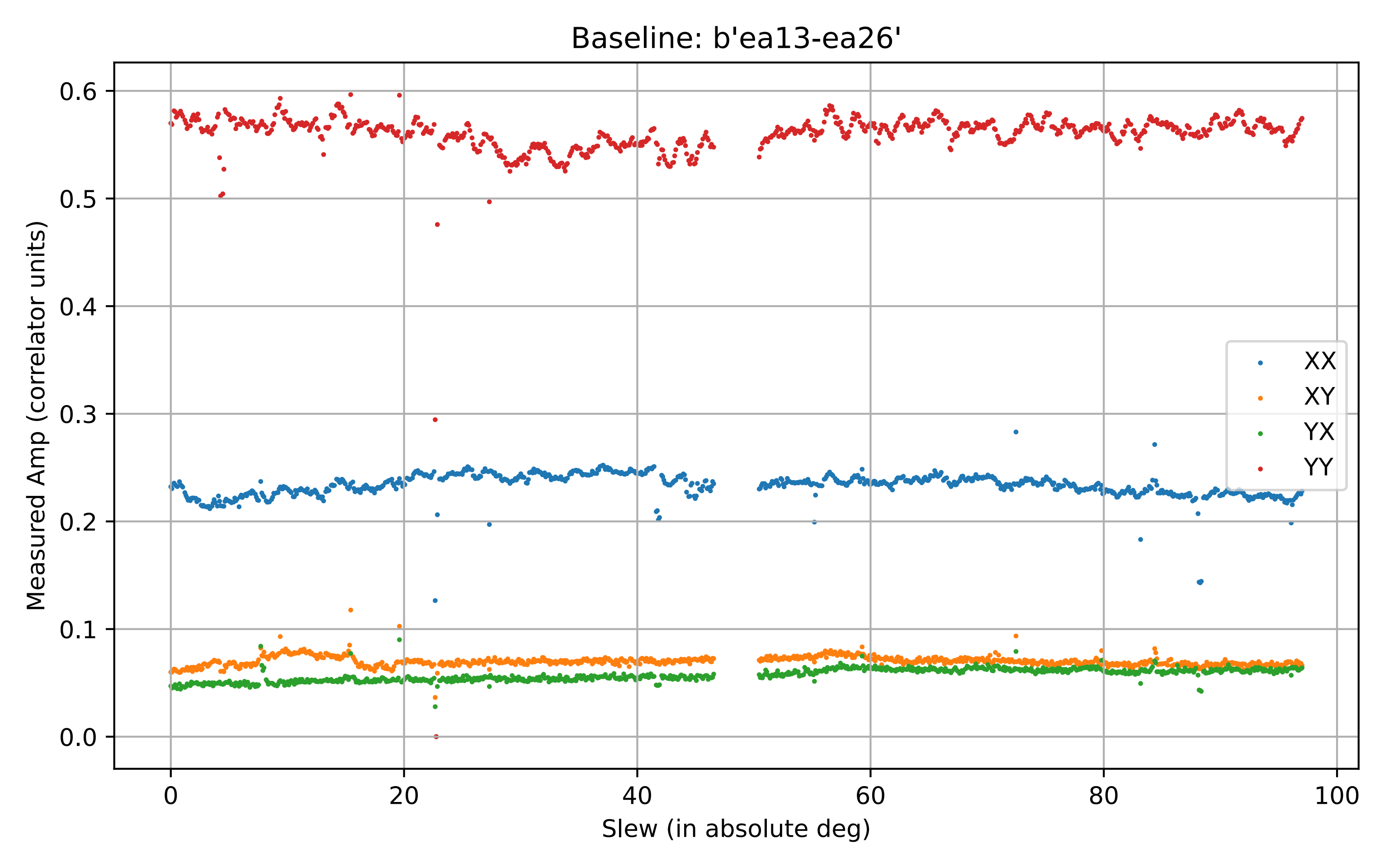


Baseline: b'ea13-ea23'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.0
0.1
0.2
0.3
0.4
0
20
40
60
80
100

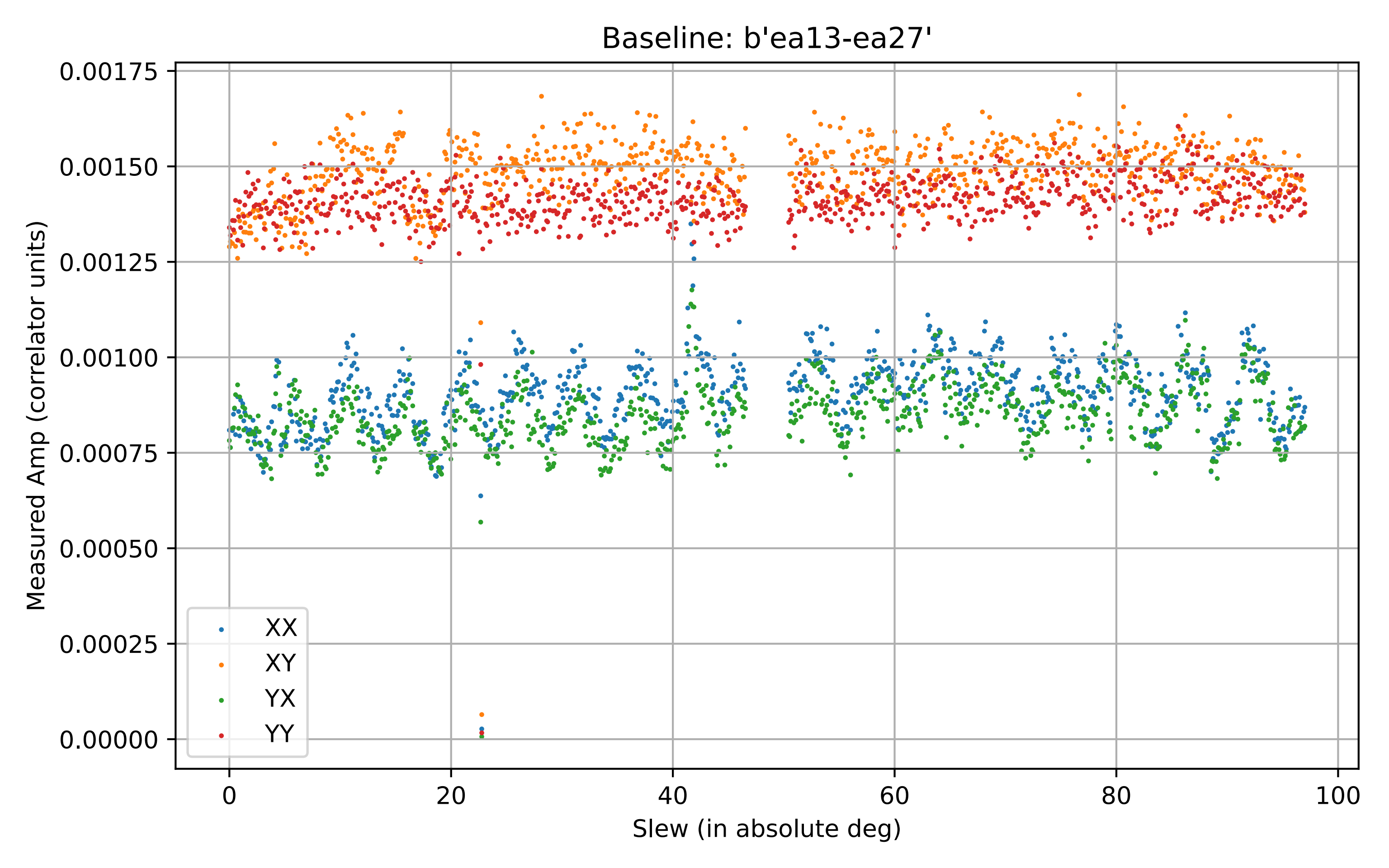

Baseline: b'ea13-ea24'
Measured Amp (correlator units)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY



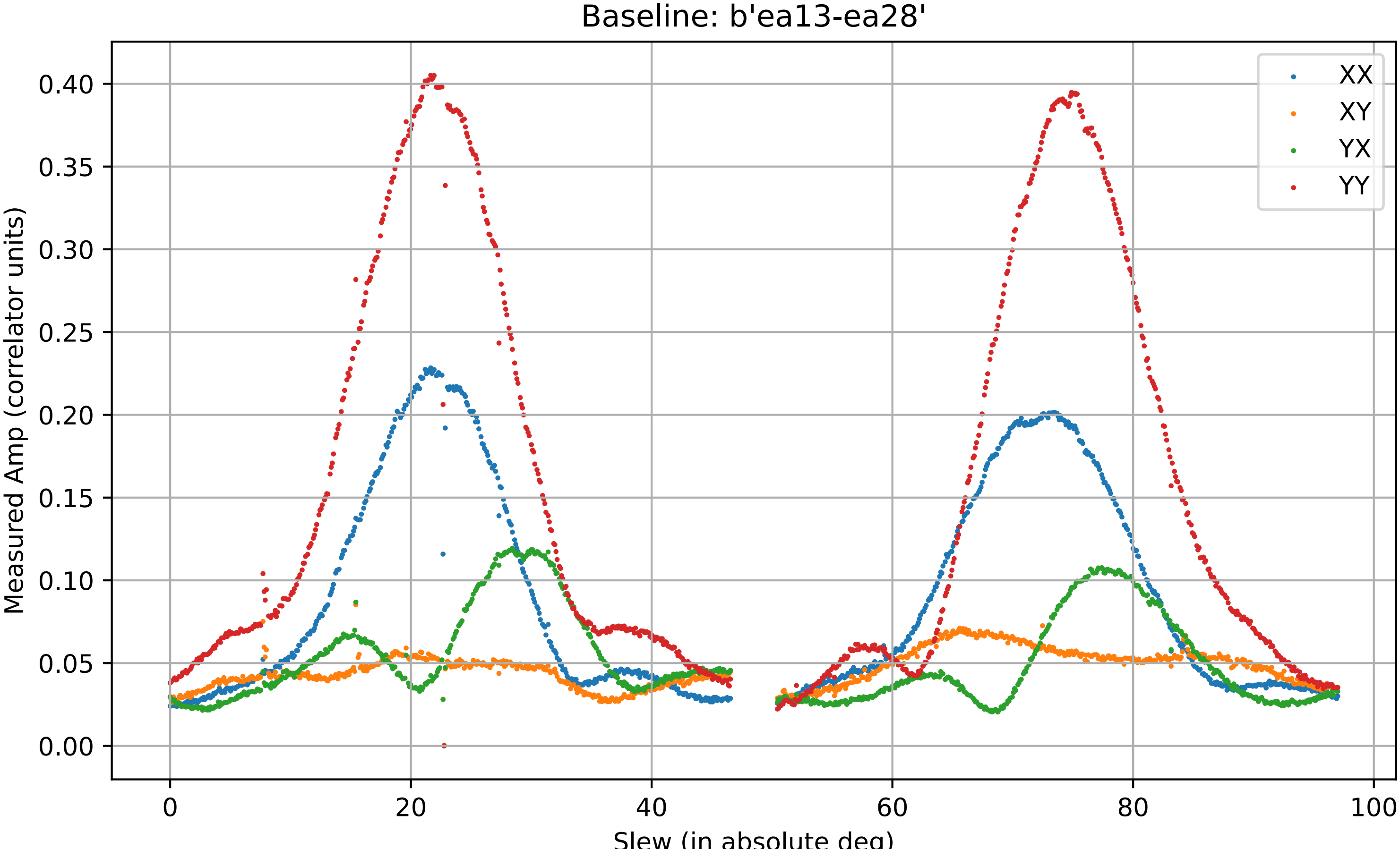
Baseline: b'ea13-ea25'
Measured Amp (correlator units)
0.000
0.001
0.002
0.003
0.004
0.005
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

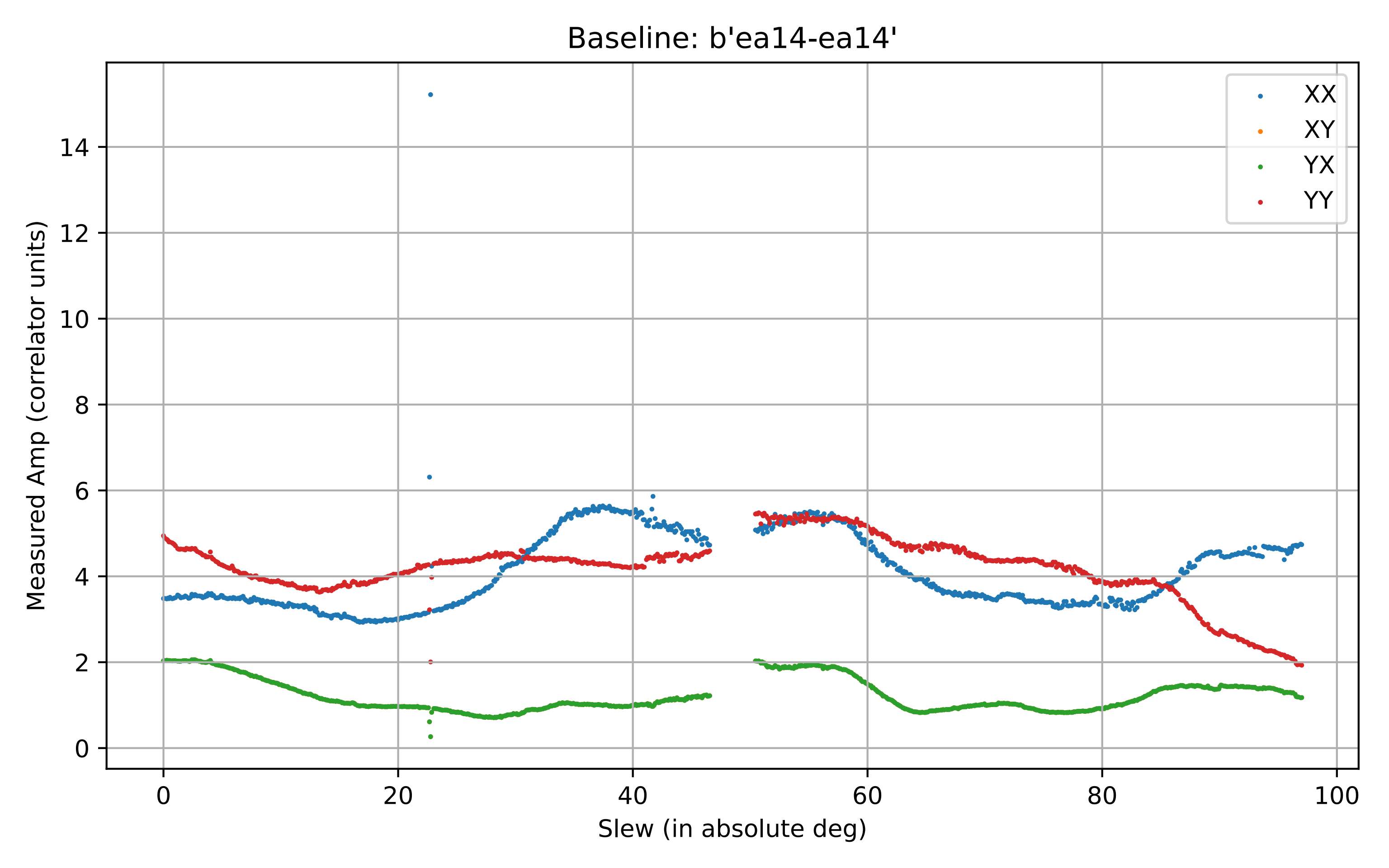


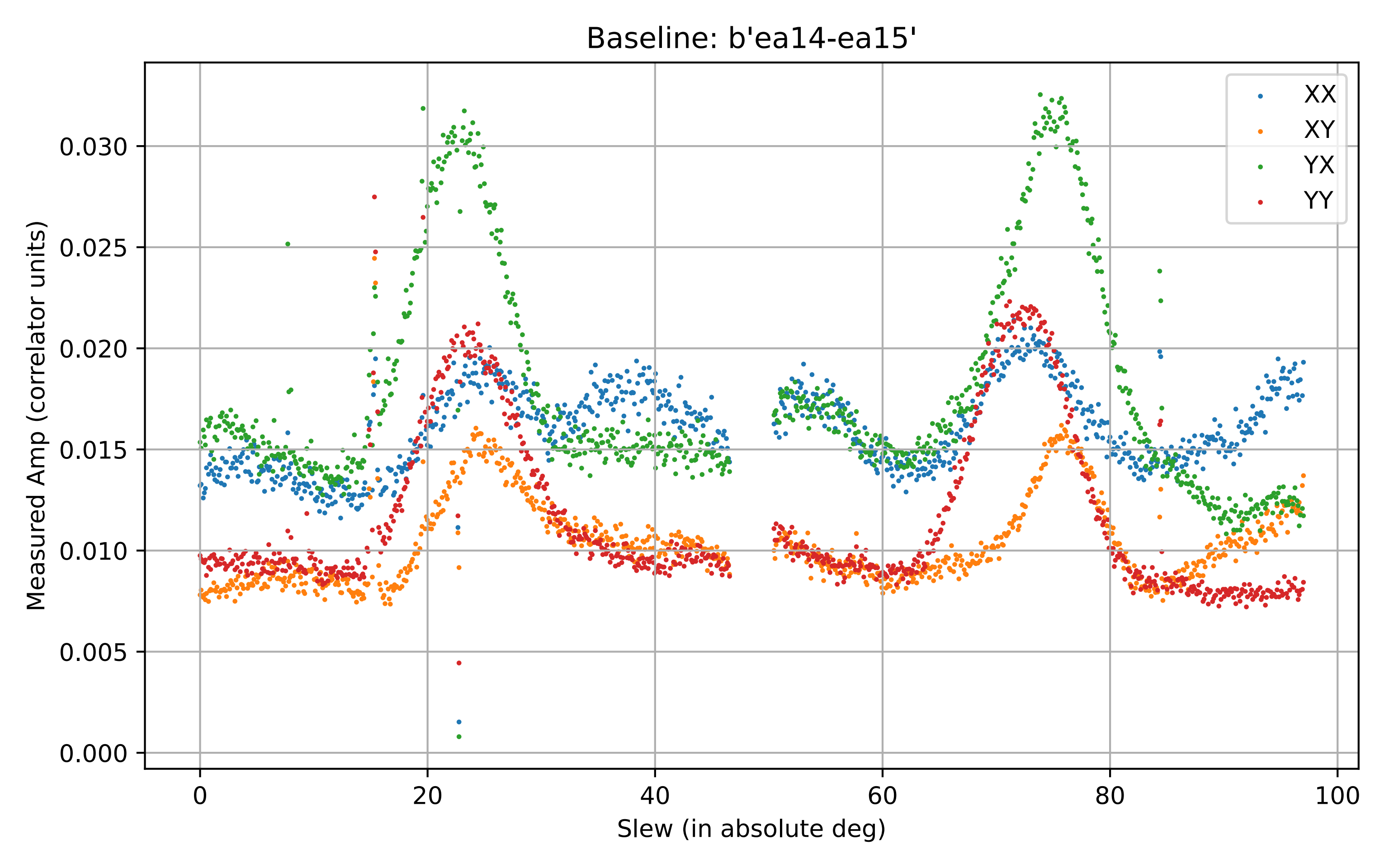
Baseline: b'ea13-ea26'
Measured Amp (correlator units)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
Slew (in absolute deg)
0
20
40
60
80
100
XX
XY
YX
YY



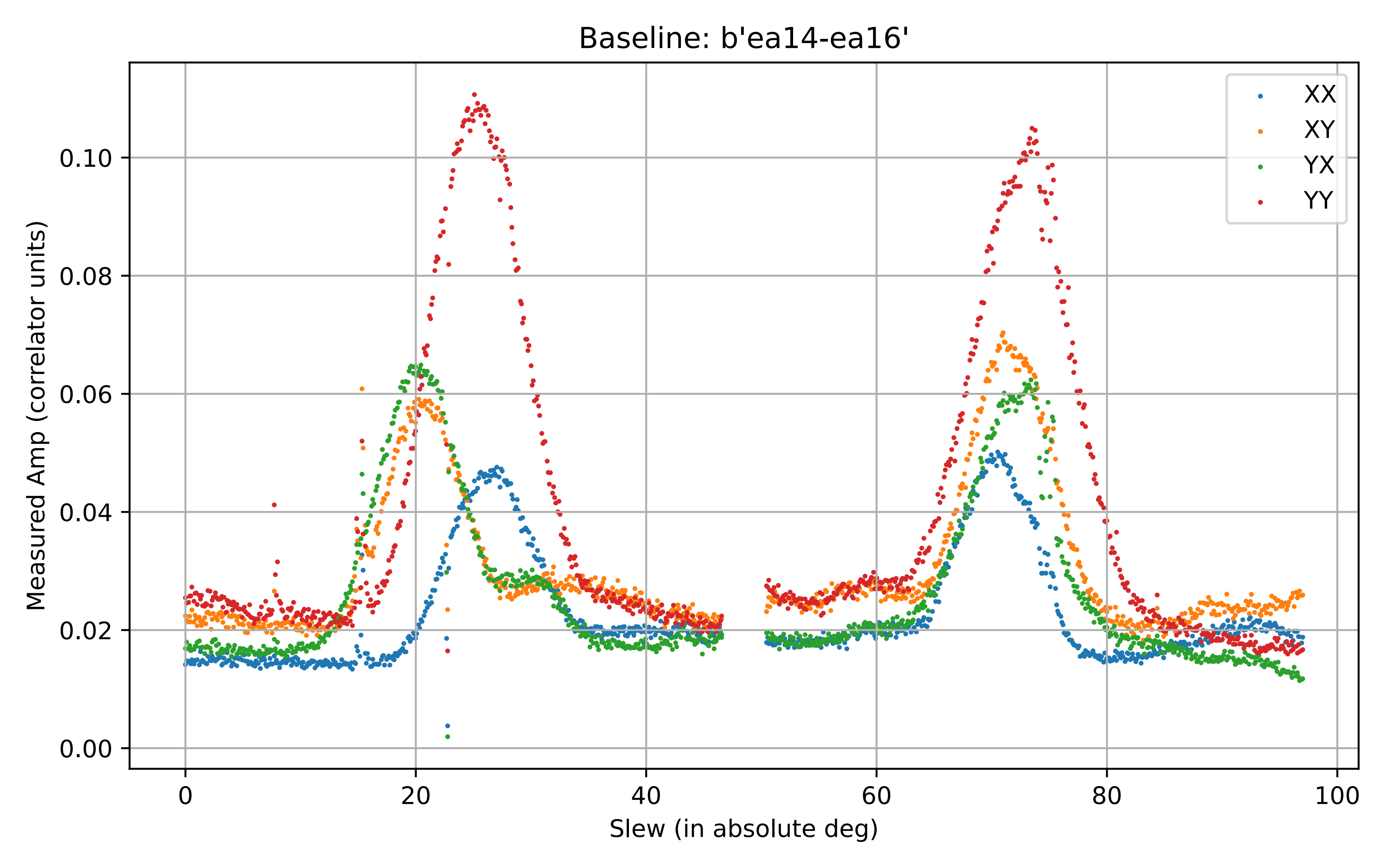
Baseline: b'ea13-ea27'
Measured Amp (correlator units)
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY


Baseline: b'ea13-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0
20
40
60
80
100

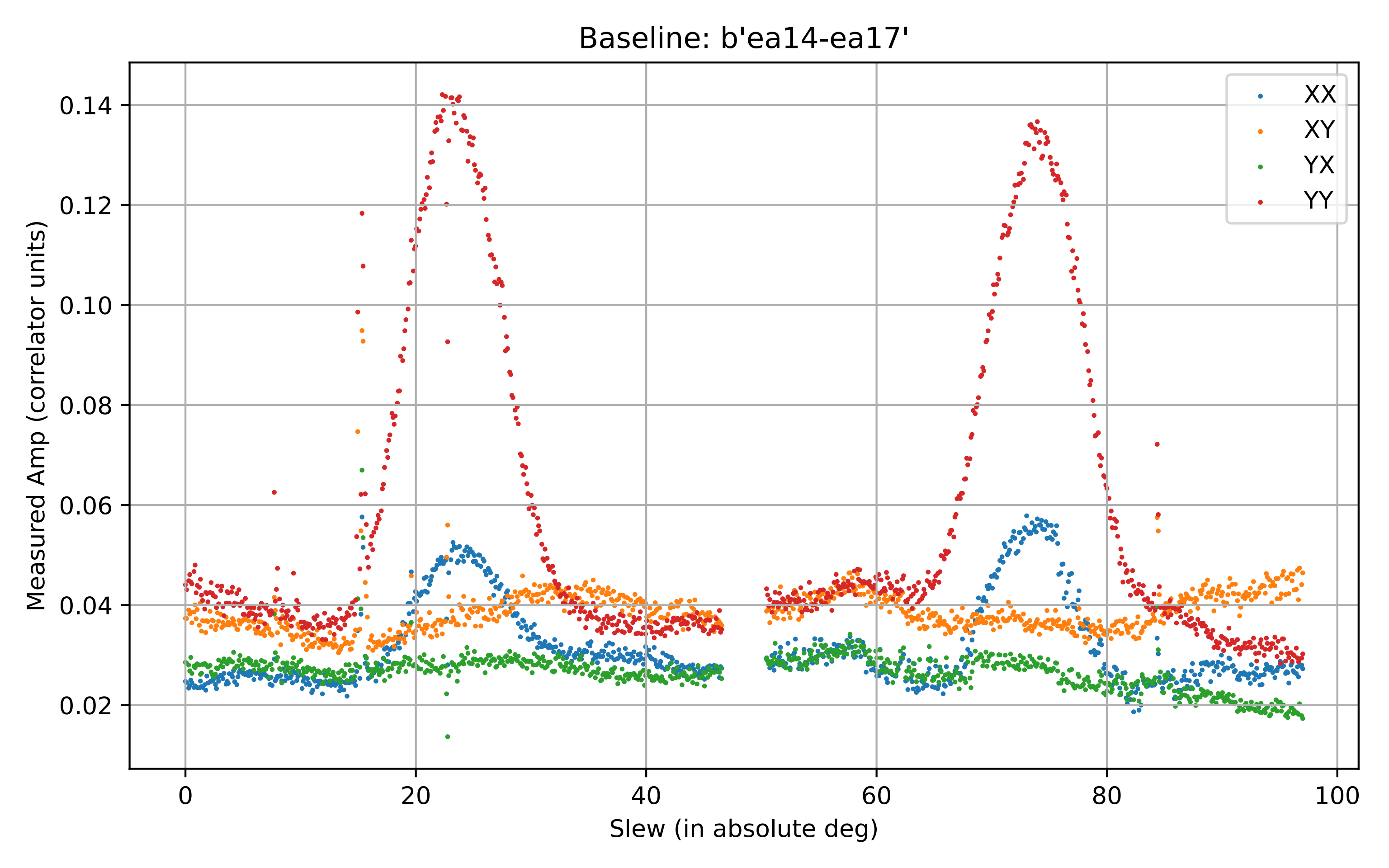

Baseline: b'ea14-ea14'
XX
XY
YX
YY
Measured Amp (correlator units)
0
2
4
6
8
10
12
14
0
20
40
60
80
100
Slew (in absolute deg)

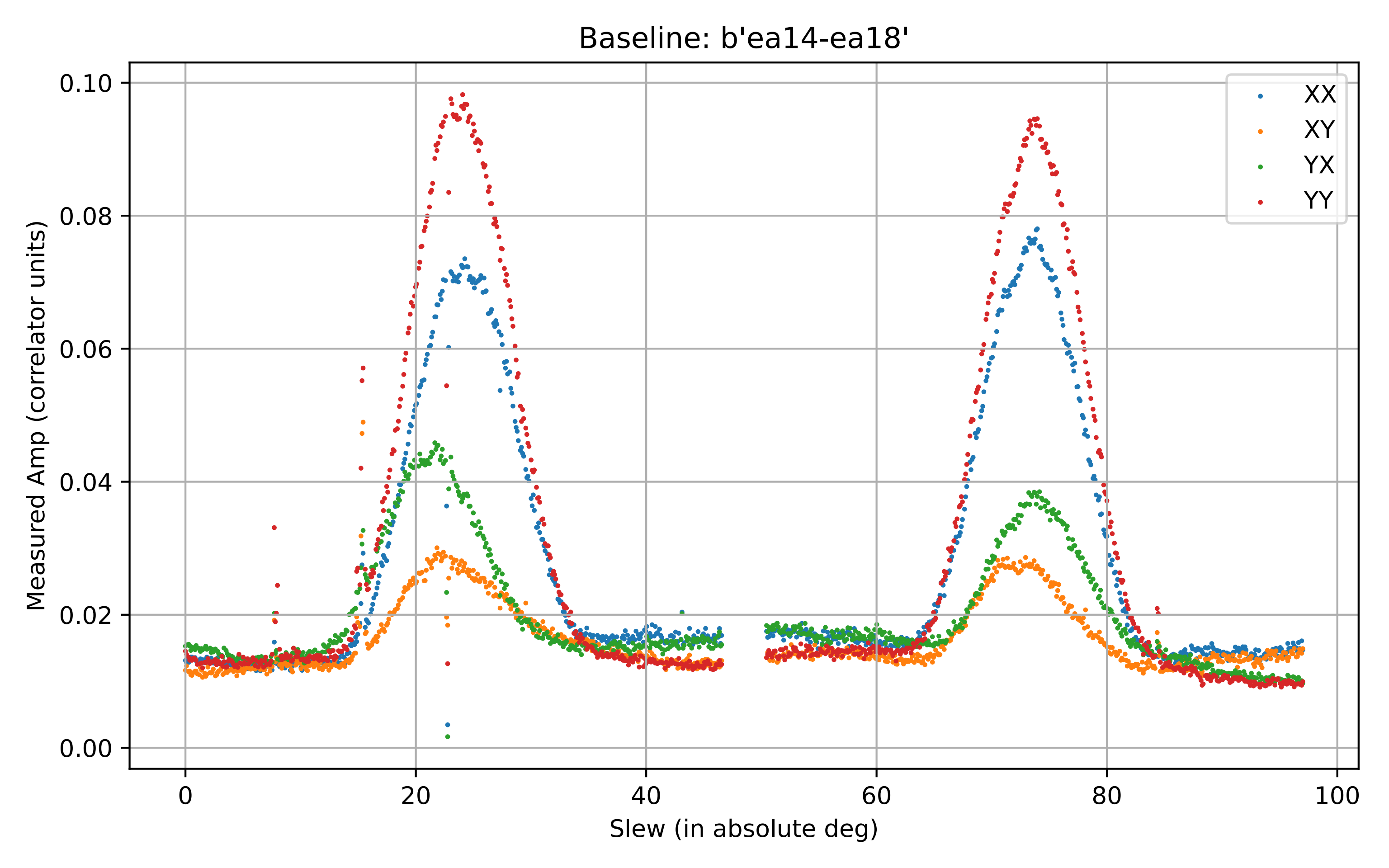


Baseline: b'ea14-ea15'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.000
0.005
0.010
0.015
0.020
0.025
0.030
0
20
40
60
80
100

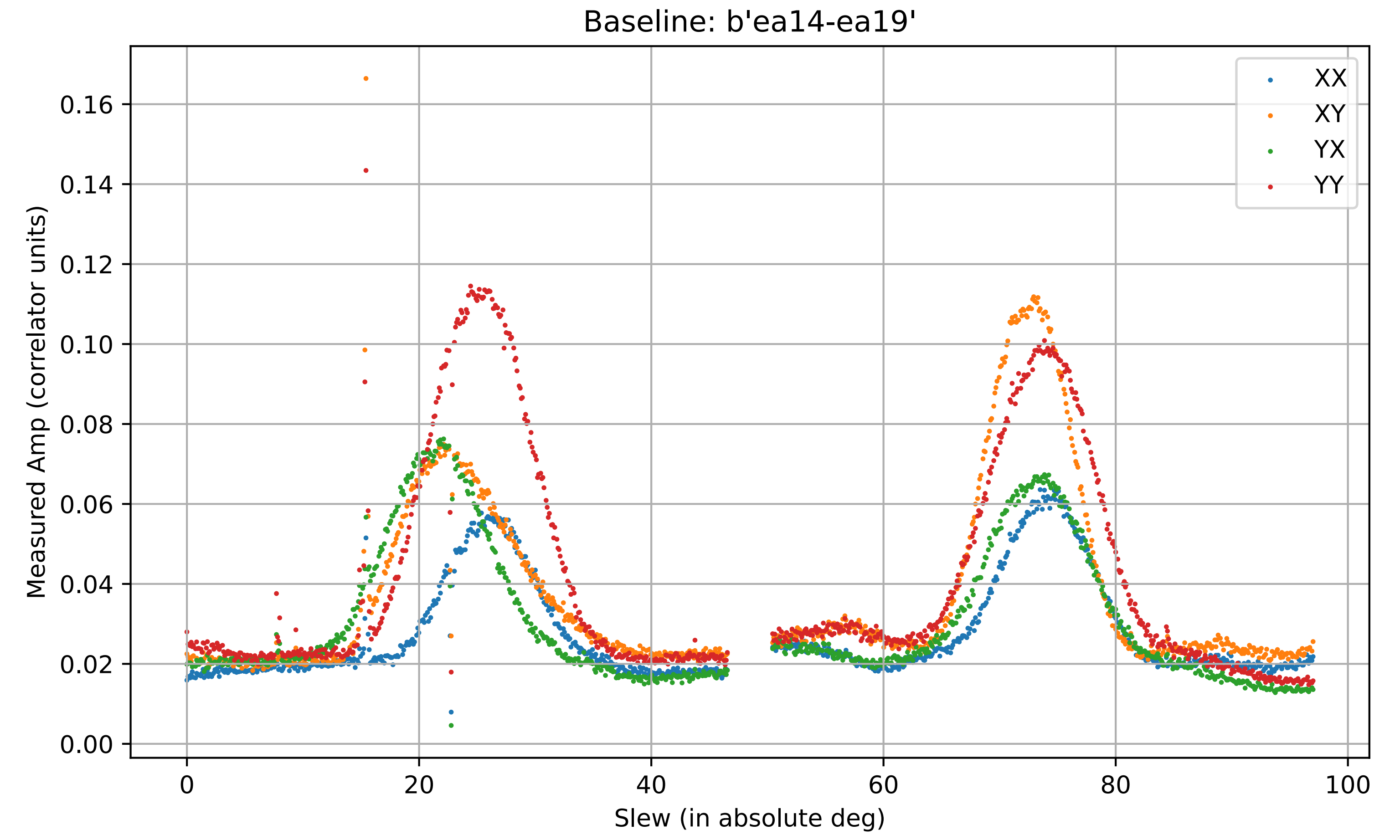


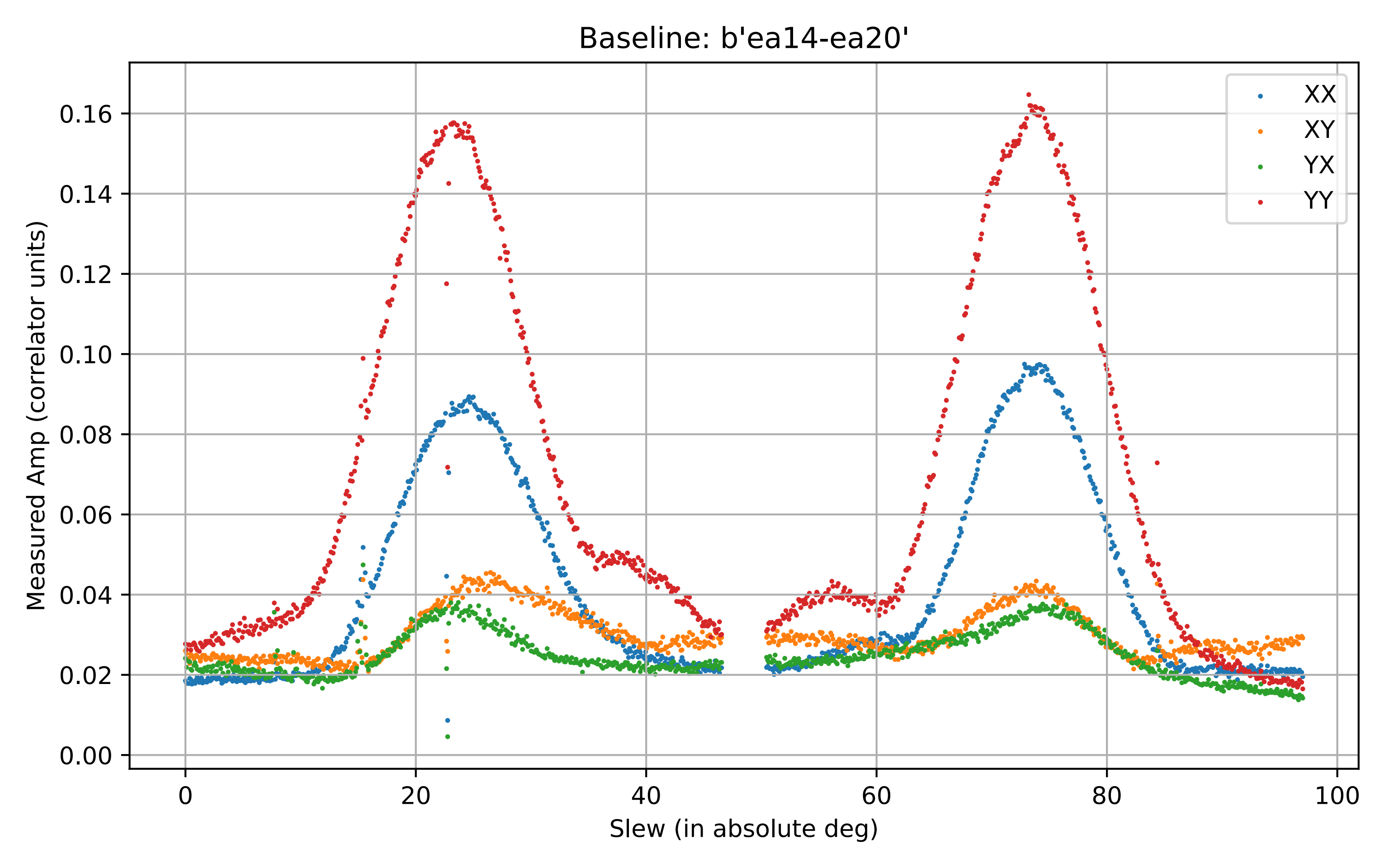
Baseline: b'ea14-ea16'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)

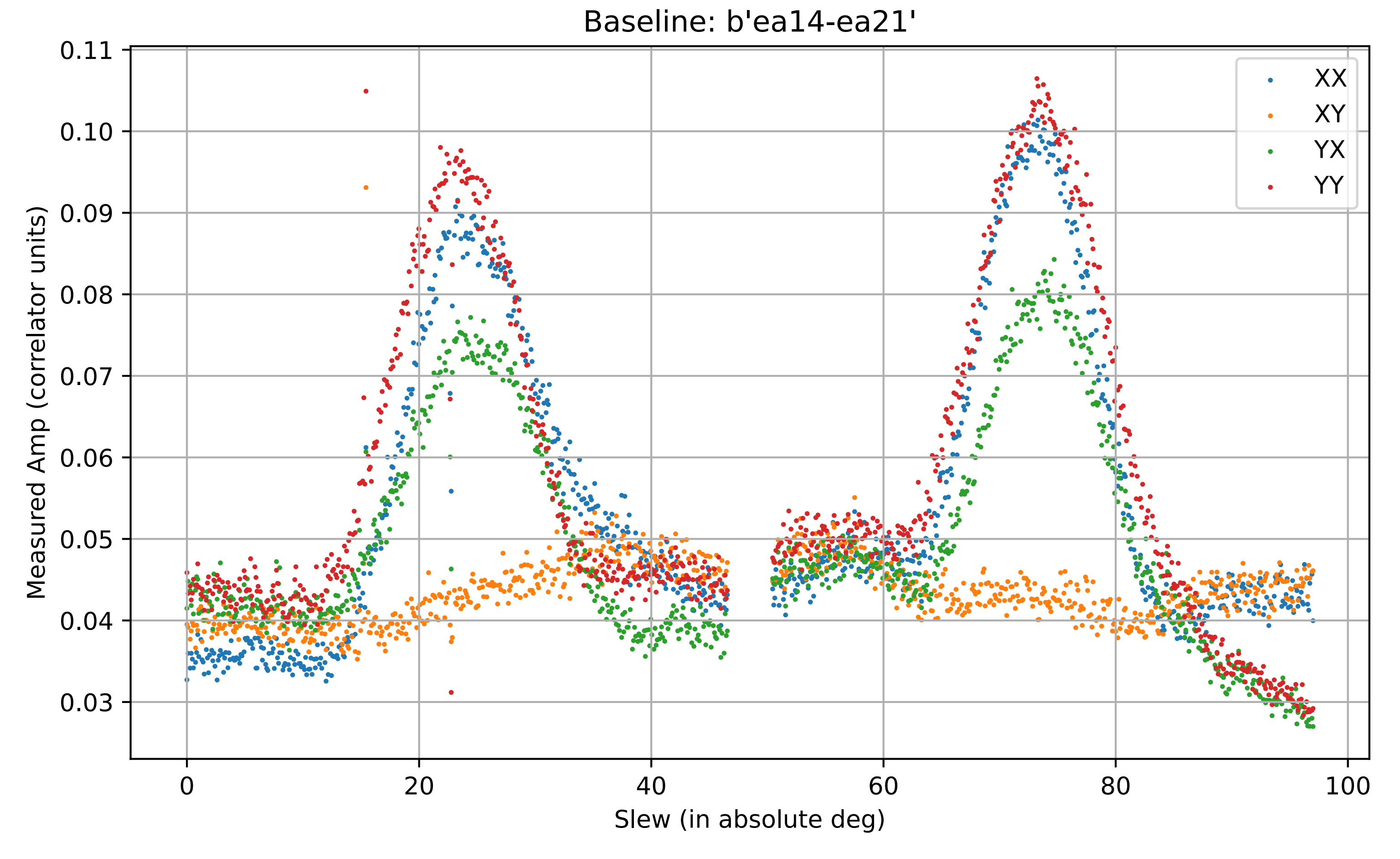

Baseline: b'ea14-ea17'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0
20
40
60
80
100

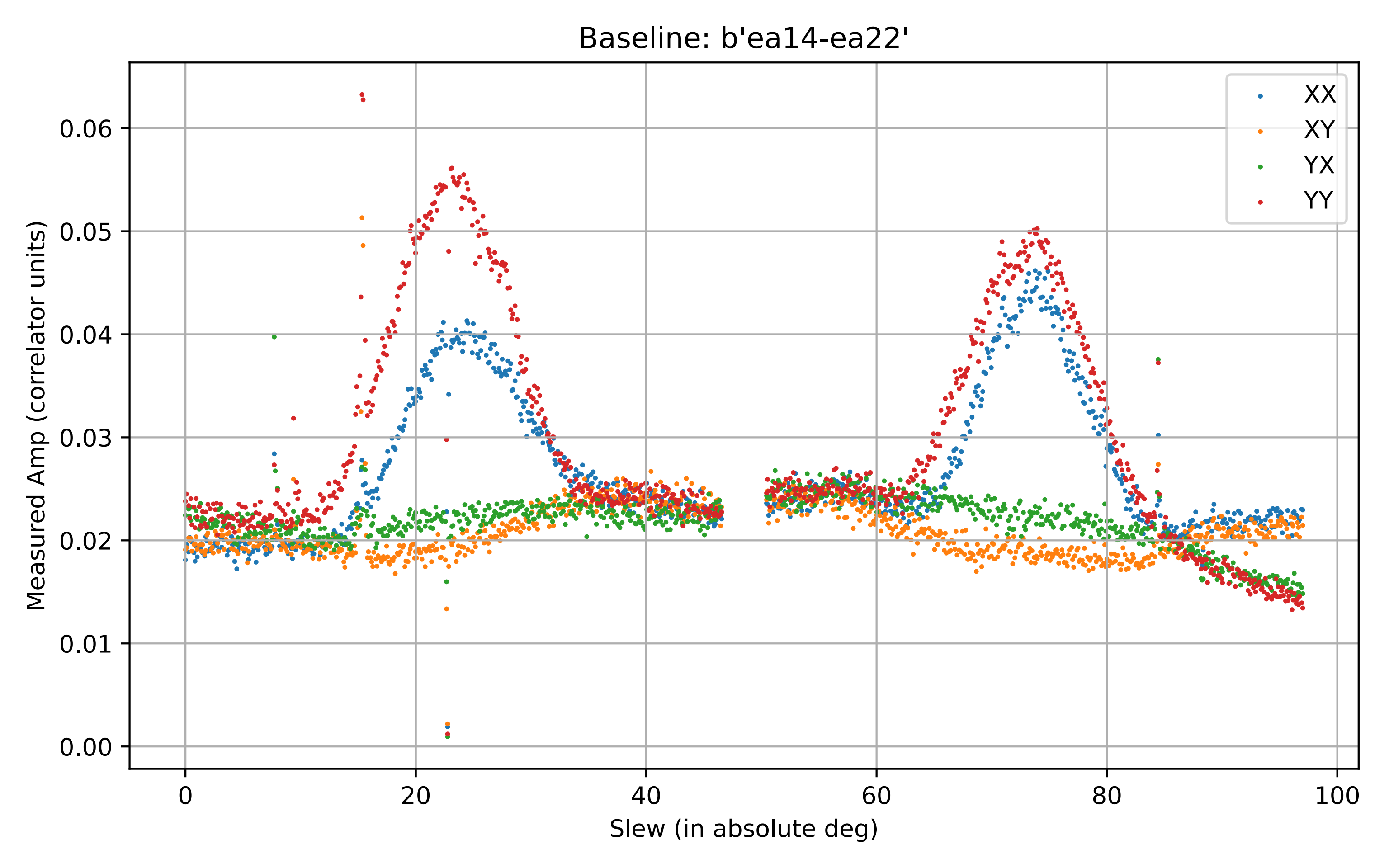


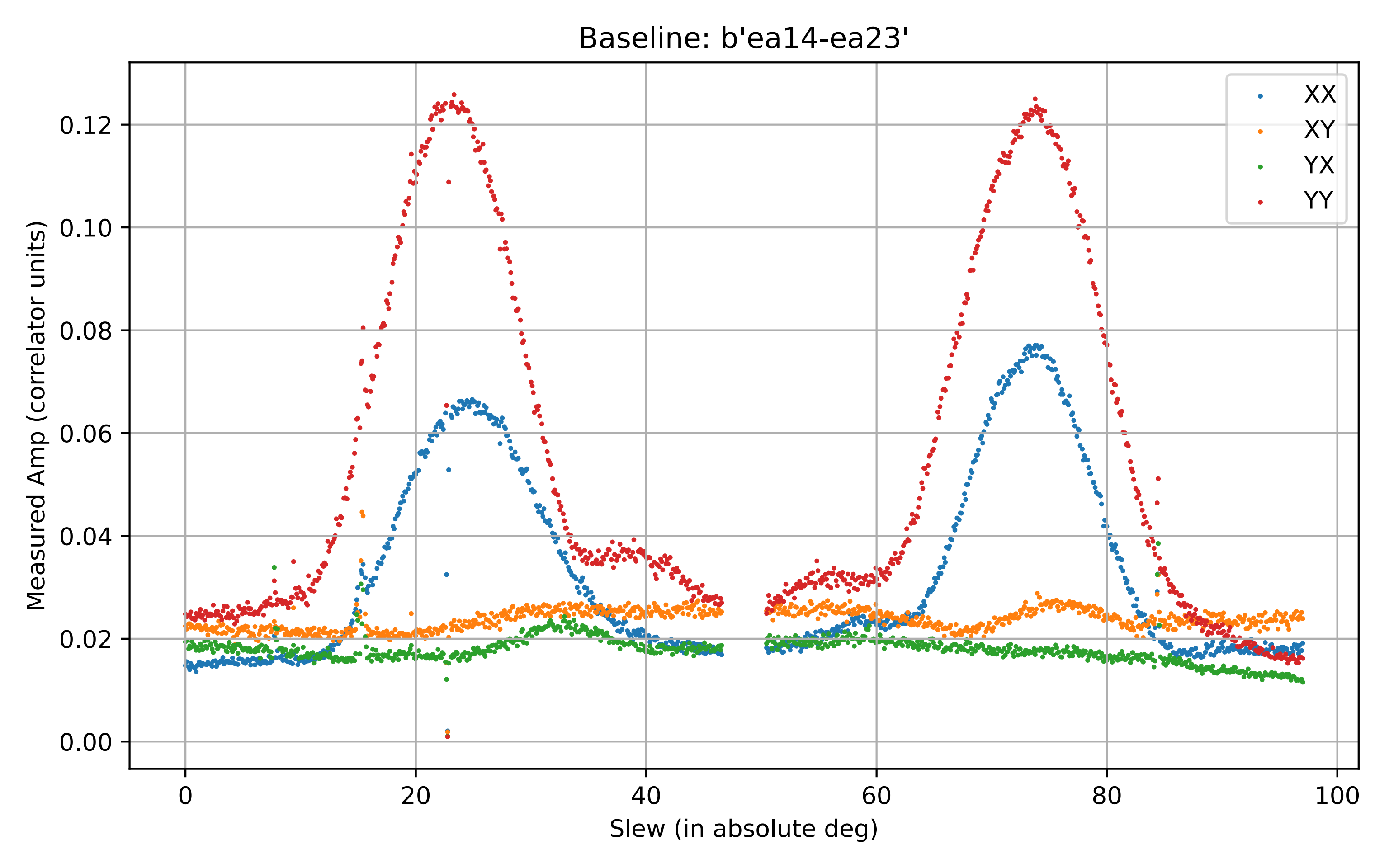
Baseline: b'ea14-ea18'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
Slew (in absolute deg)
0
20
40
60
80
100
XX
XY
YX
YY


Baseline: b'ea14-ea19'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100
Slew (in absolute deg)

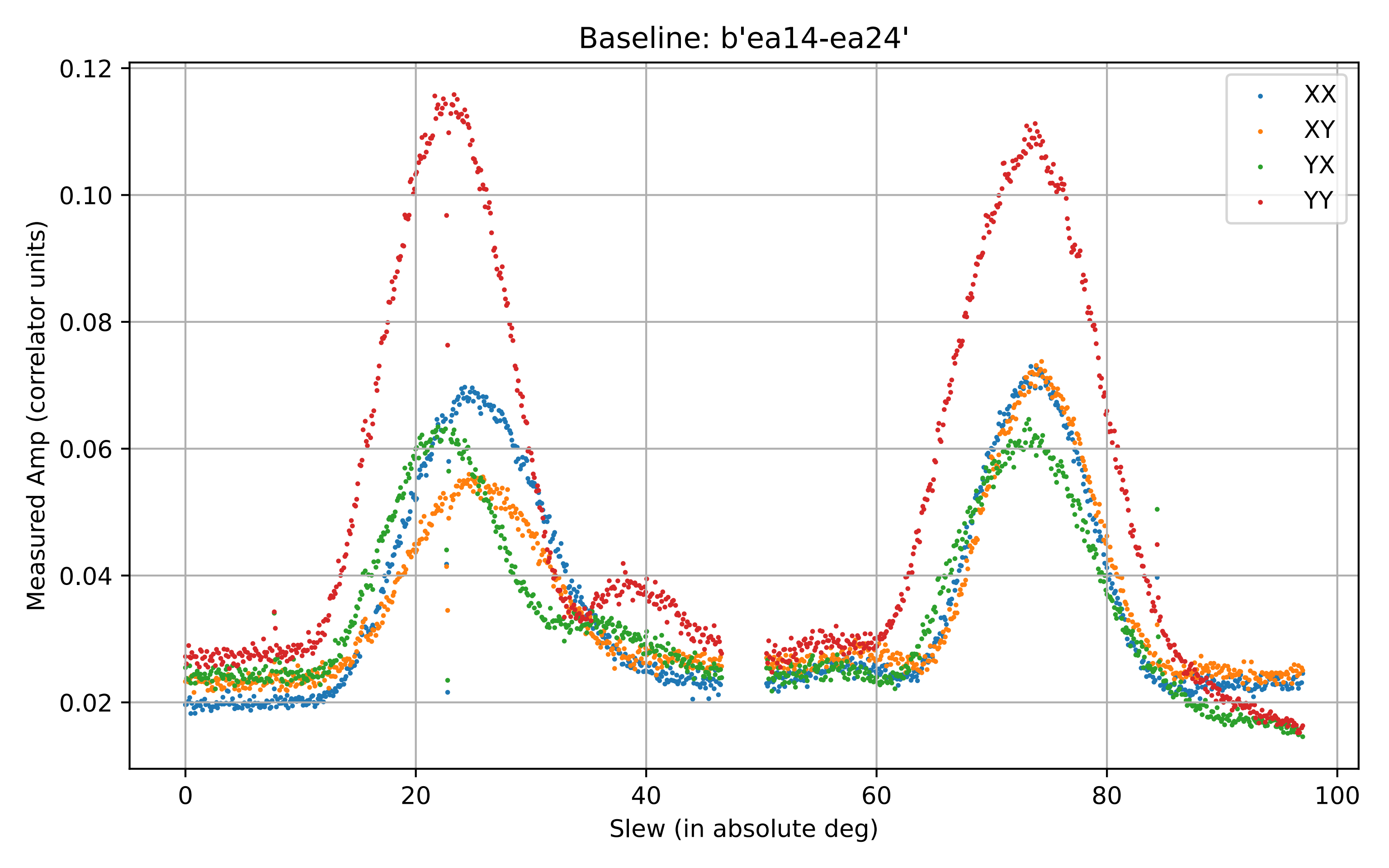

Baseline: b'ea14-ea20'
Measured Amp (correlator units)
Slew (in absolute deg)
XX
XY
YX
YY
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0.16
0
20
40
60
80
100

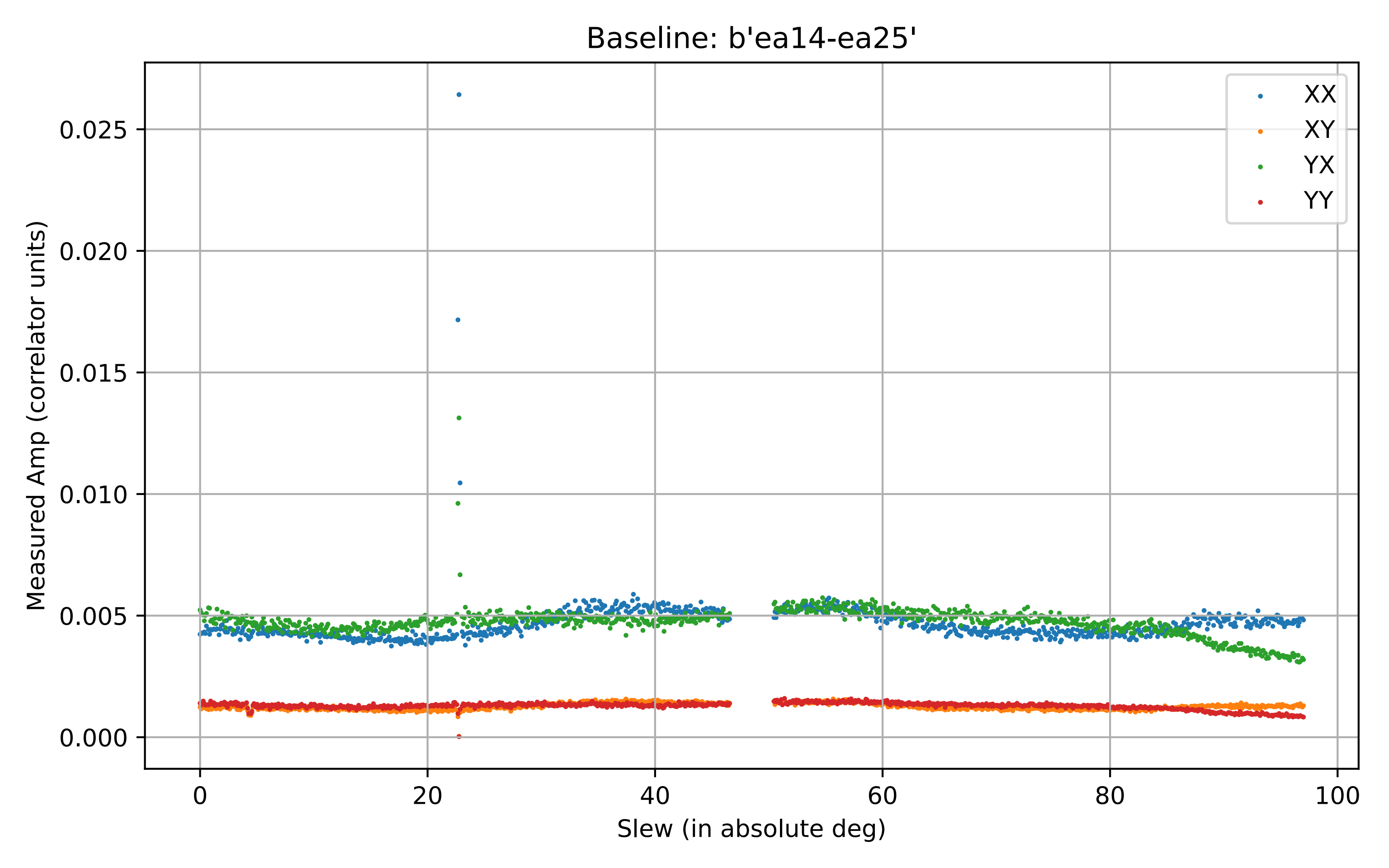

Baseline: b'ea14-ea21'
Measured Amp (correlator units)
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.11
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY


Baseline: b'ea14-ea22'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0
20
40
60
80
100
Slew (in absolute deg)

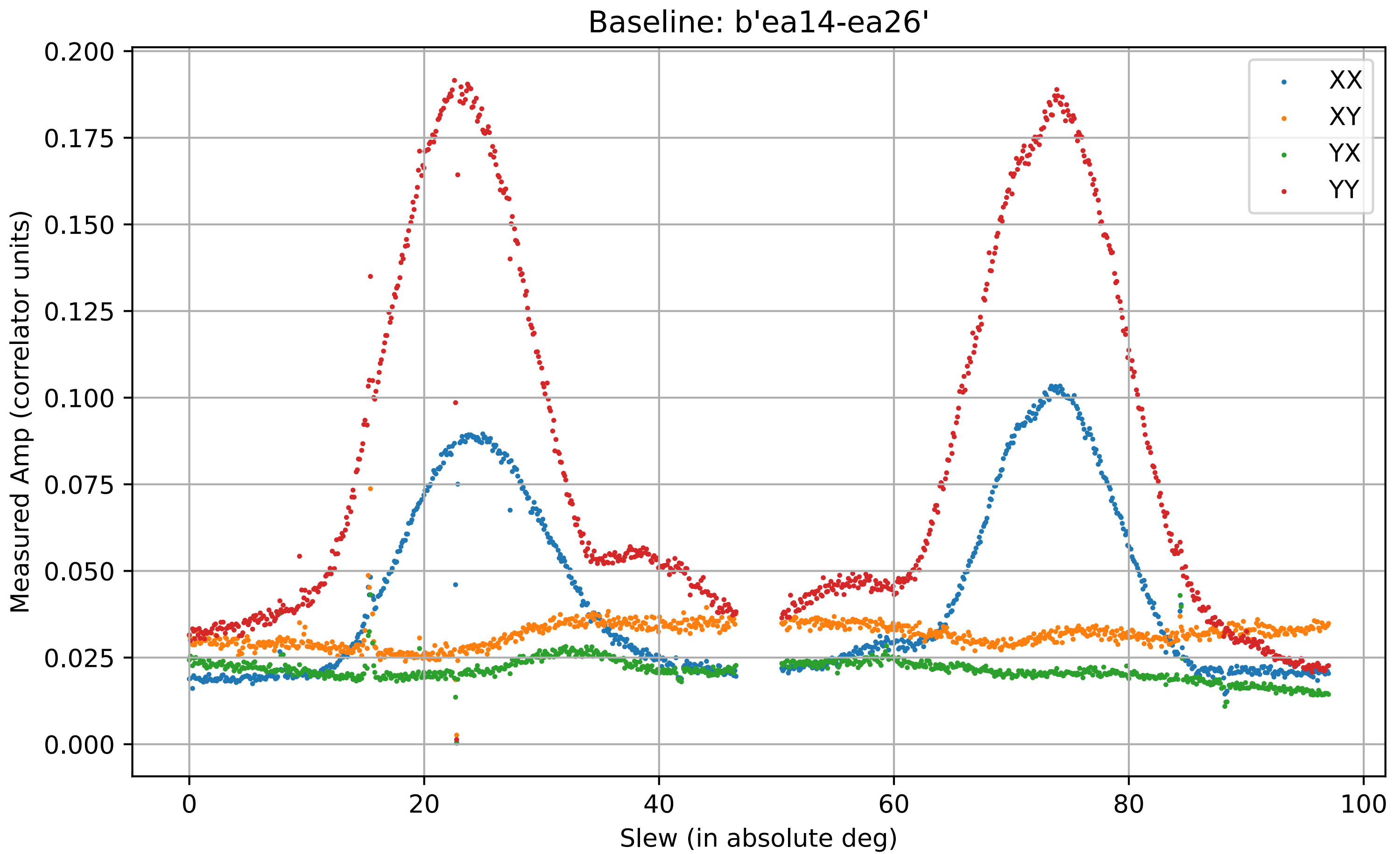


Baseline: b'ea14-ea23'
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
Slew (in absolute deg)
XX
XY
YX
YY

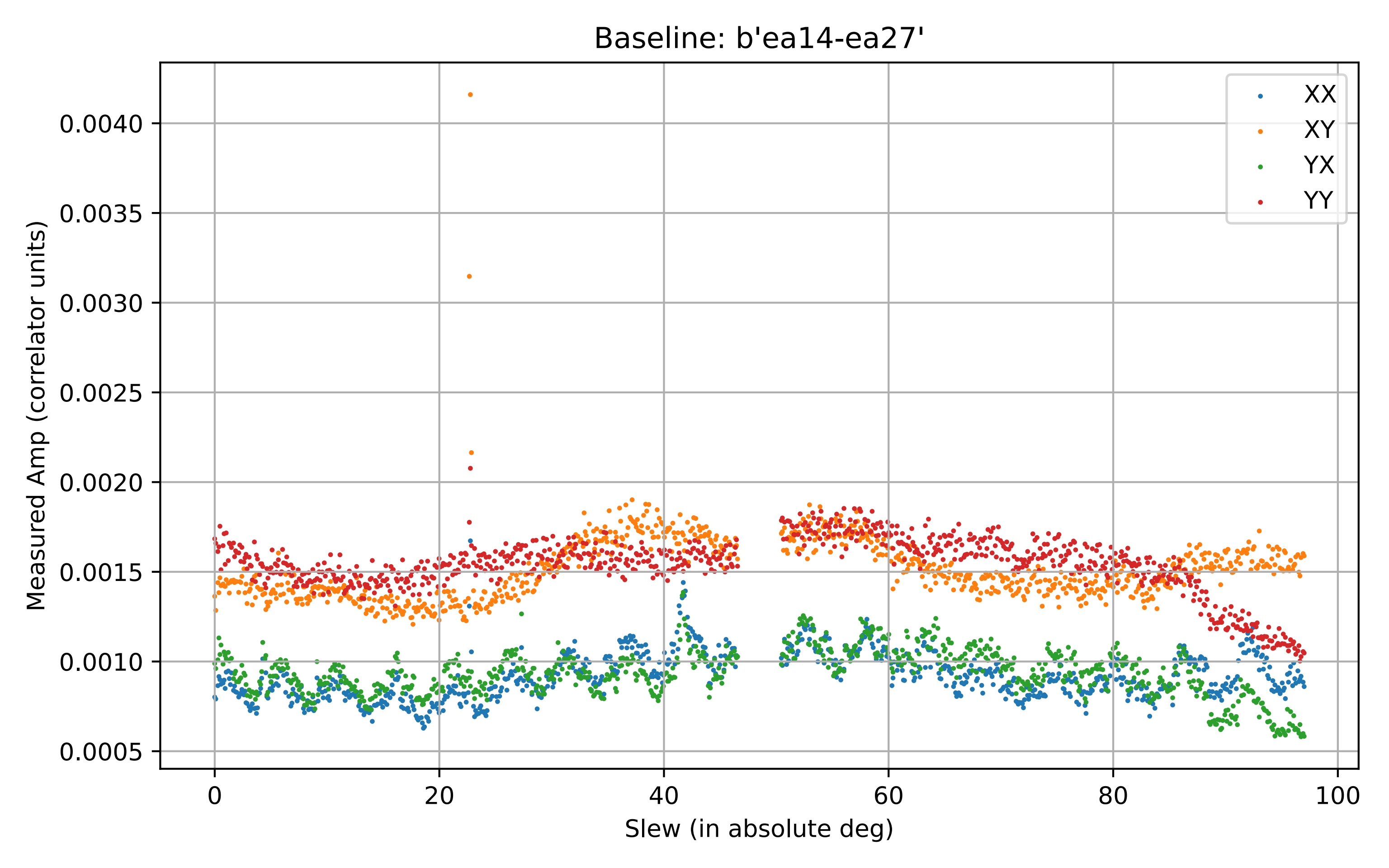

Baseline: b'ea14-ea24'
XX
XY
YX
YY
Measured Amp (correlator units)
Slew (in absolute deg)
0.12
0.10
0.08
0.06
0.04
0.02
0
20
40
60
80
100

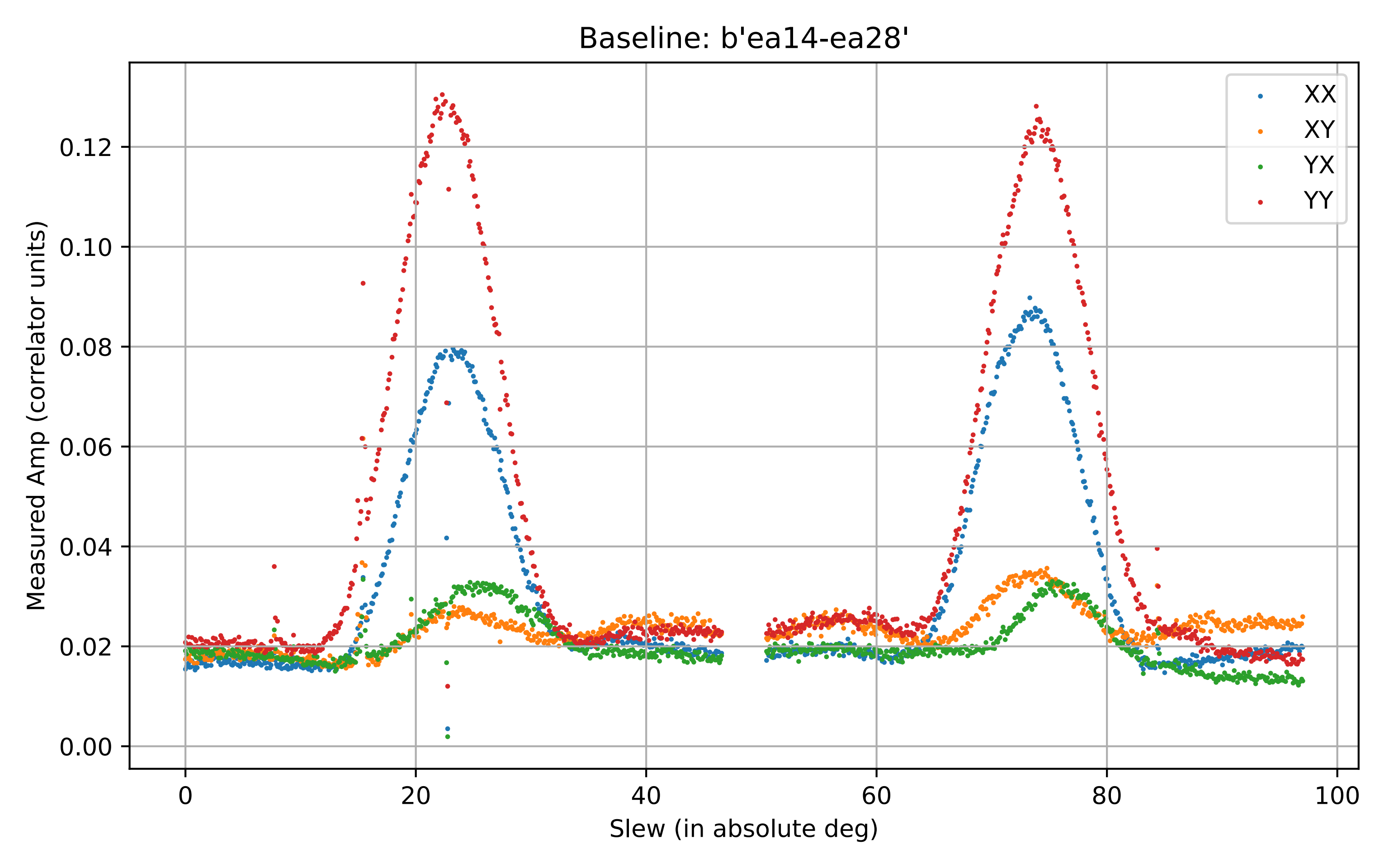


Baseline: b'ea14-ea25'
XX
XY
YX
YY
Measured Amp (correlator units)
0.000
0.005
0.010
0.015
0.020
0.025
0
20
40
60
80
100
Slew (in absolute deg)

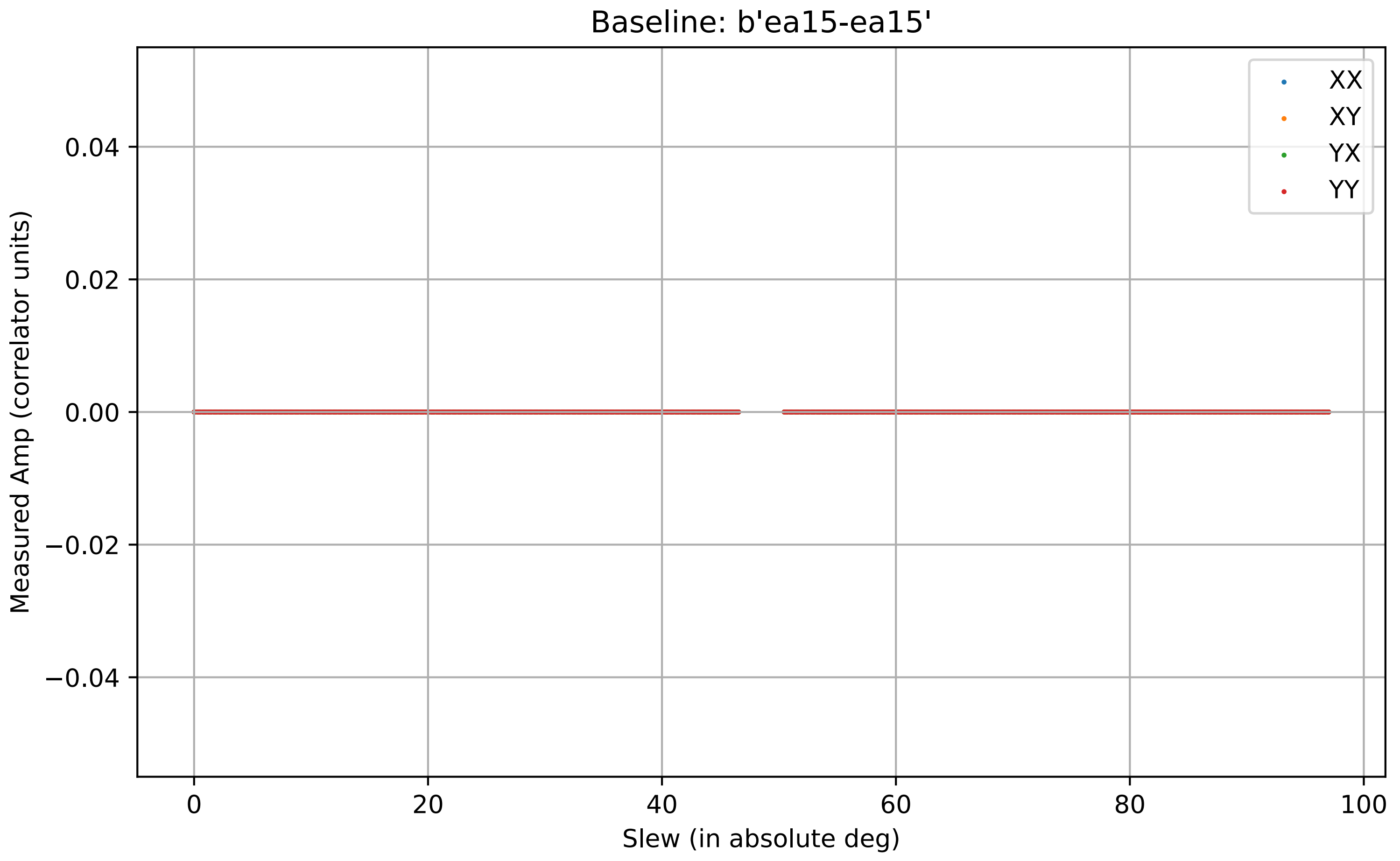


Baseline: b'ea14-ea26'
Measured Amp (correlator units)
Slew (in absolute deg)
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0.200
0
20
40
60
80
100
XX
XY
YX
YY

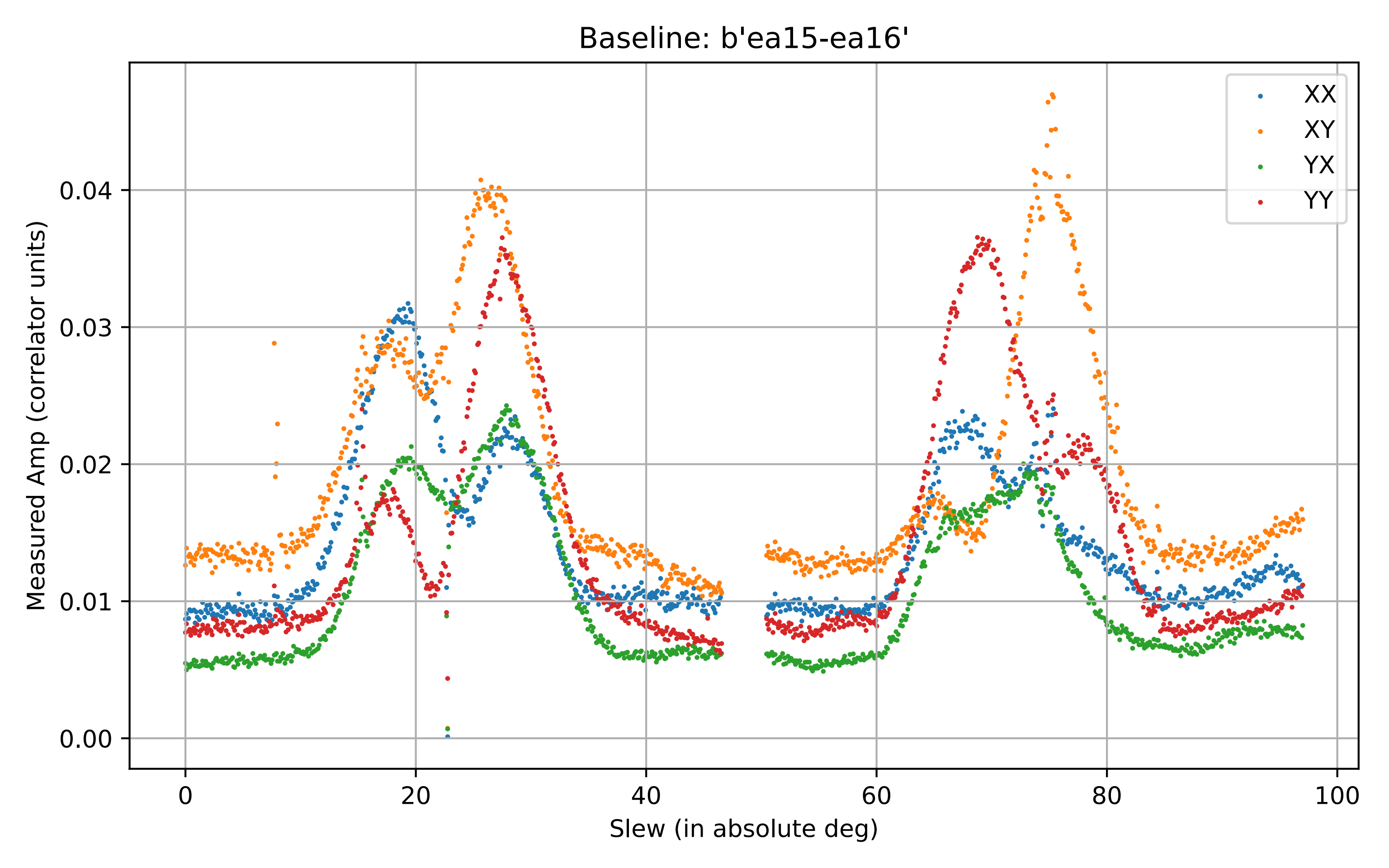

Baseline: b'ea14-ea27'
XX
XY
YX
YY
Measured Amp (correlator units)
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0
20
40
60
80
100
Slew (in absolute deg)



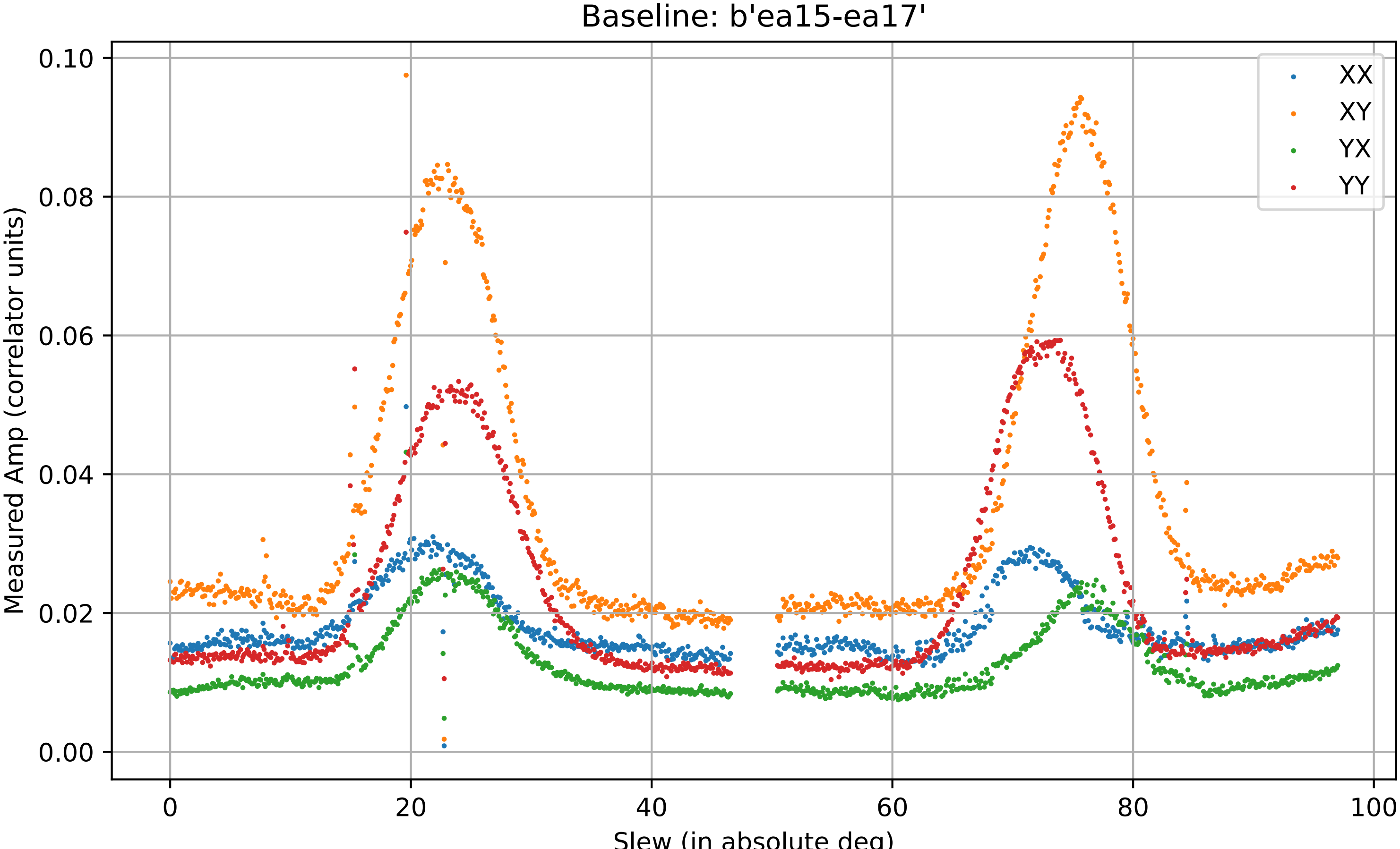
Baseline: b'ea14-ea28'
Measured Amp (correlator units)
Slew (in absolute deg)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0
20
40
60
80
100
XX
XY
YX
YY



Baseline: b'ea15-ea15'
XX
XY
YX
YY
0.04
0.02
0.00
−0.02
−0.04
Measured Amp (correlator units)
0
20
40
60
80
100
Slew (in absolute deg)



Baseline: b'ea15-ea16'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.01
0.02
0.03
0.04
0
20
40
60
80
100
Slew (in absolute deg)


Baseline: b'ea15-ea17'
XX
XY
YX
YY
Measured Amp (correlator units)
0.00
0.02
0.04
0.06
0.08
0.10
0
20
40
60
80
100
Slew (in absolute deg)