

# A few new tools for VGOS postprocessing

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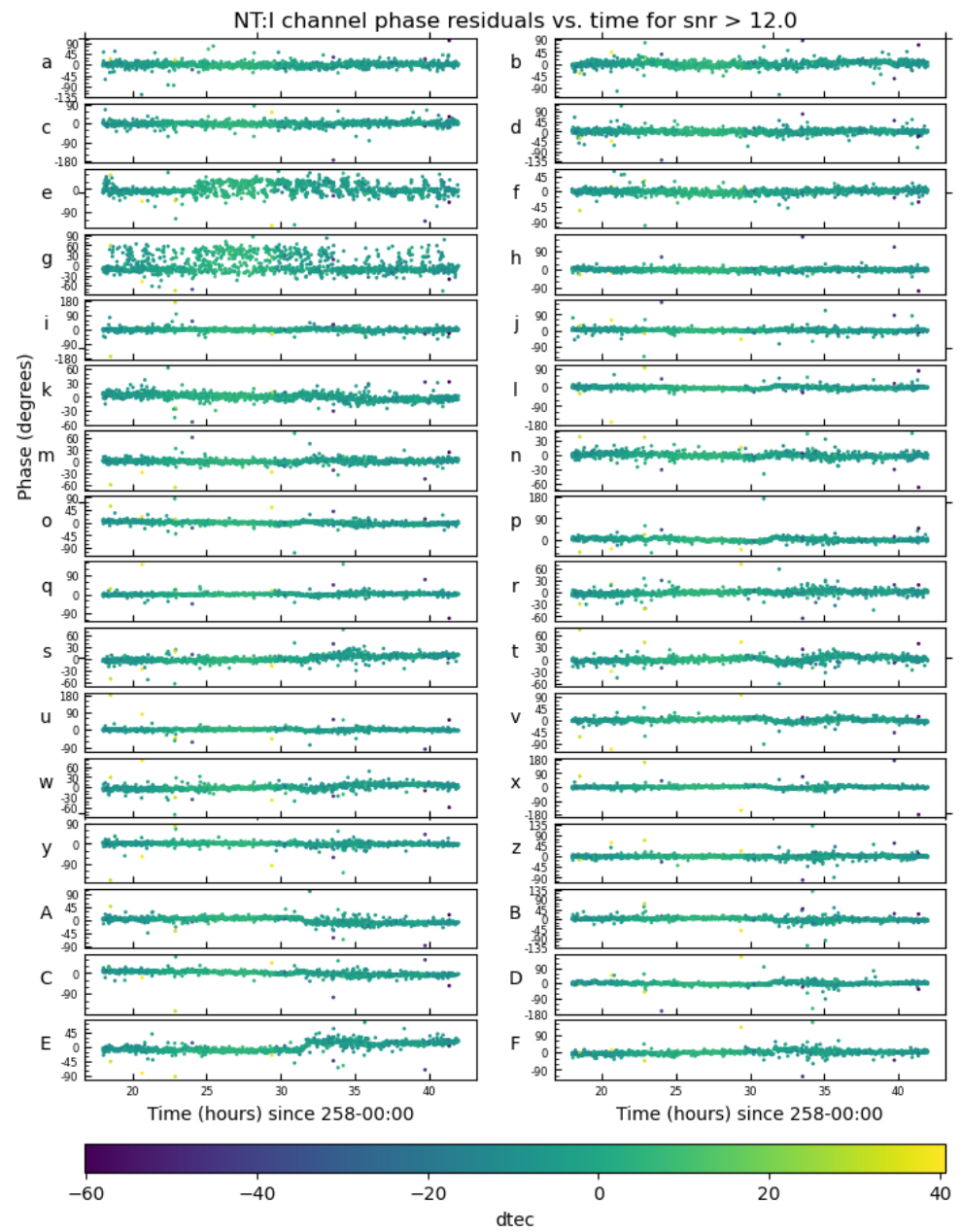


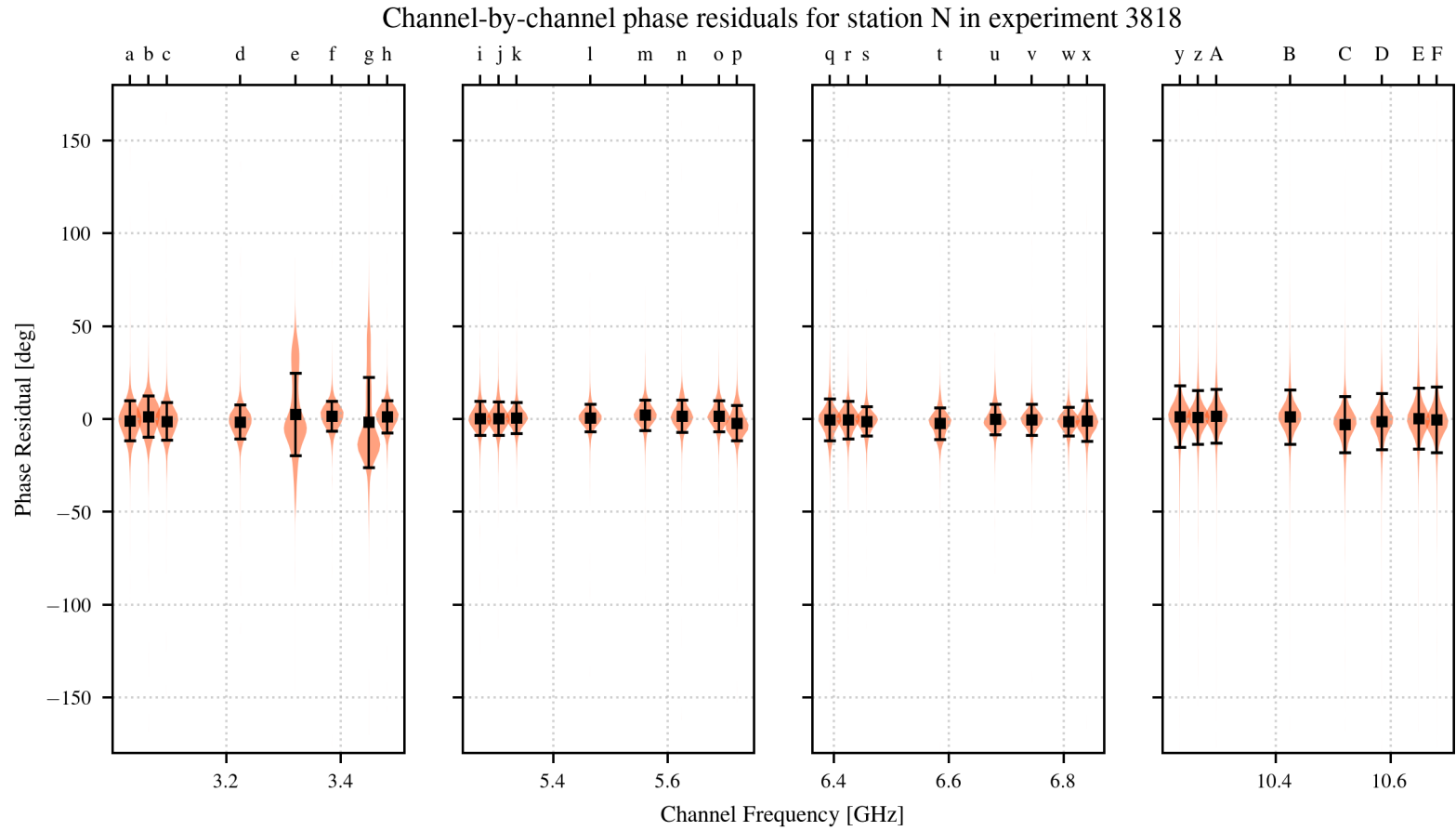
# Residual phases of each channel

After we generate the pcphases and y-x delays/offsets for the control file, check the per-channel phase residuals for any outliers.

`phase_resid.py` generates one plot for every baseline, and shows the time-series trend of phase residuals.

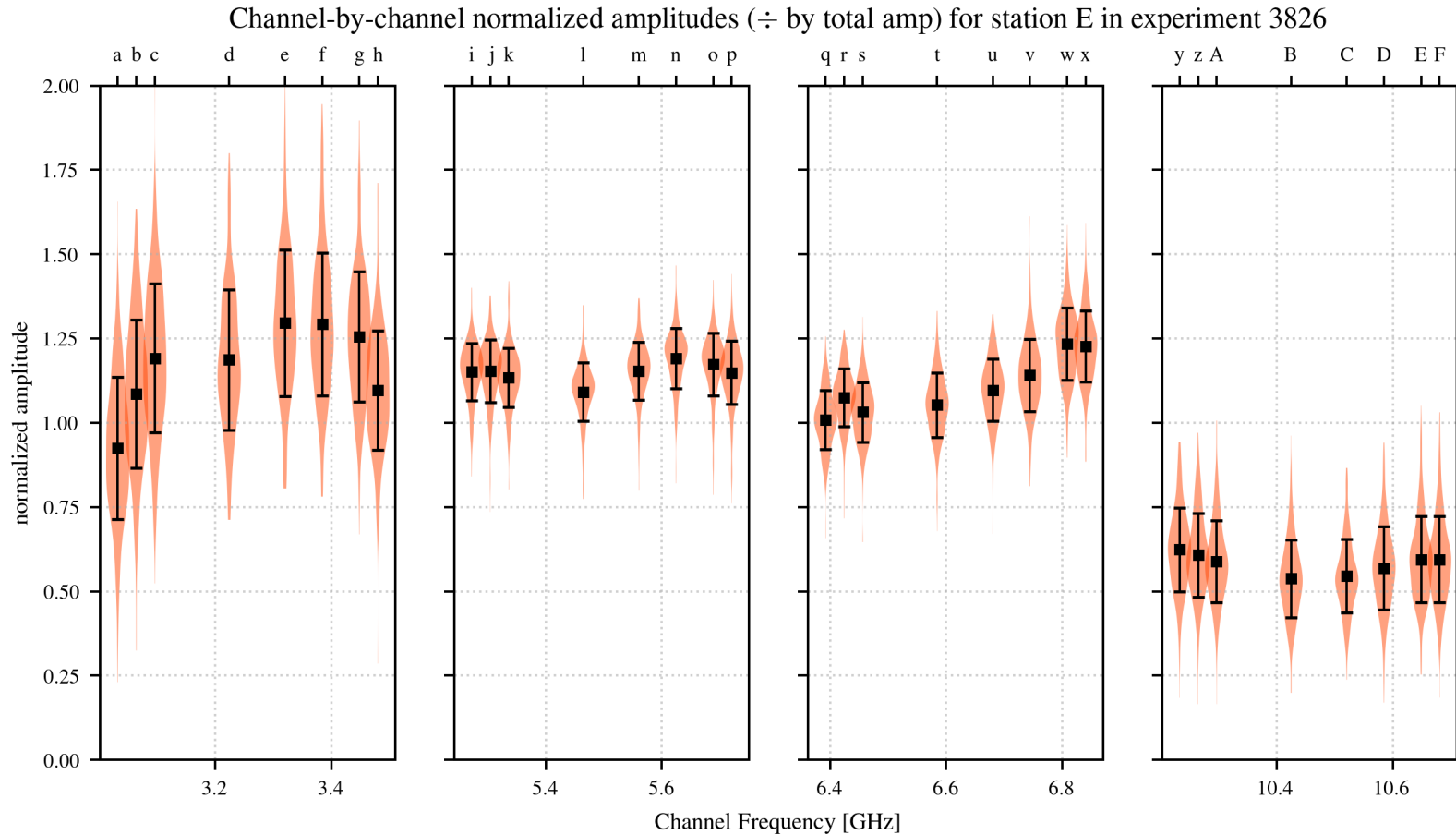
That's a lot of plots! If there are poorly-behaved channels it can be hard to tell which station is causing the problem.





channel\_phase\_resid.py combines data from several baselines and plots the distribution of phase residuals for a single station.

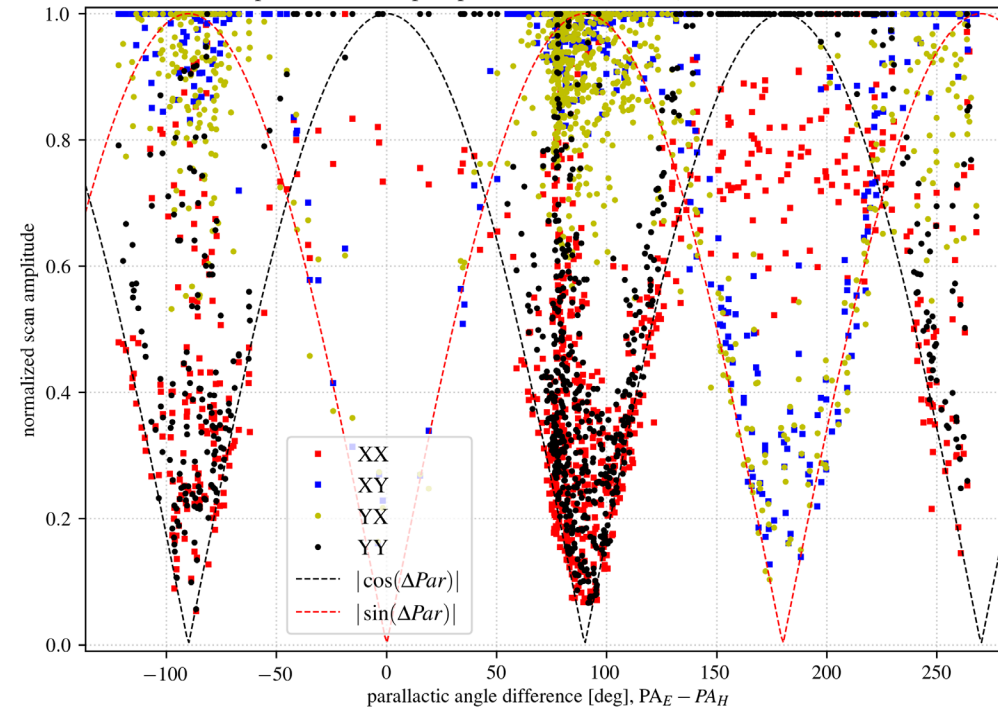
```
$ channel_phase_resid.py cf_3818_MEHILNSTVY_pstokes_dh1 N EHSVY  
I . -n 16 -p -s 12. -q 3
```



Similarly, `channel_amplitude.py` generates one plot for every station, and shows the distribution of channel amplitudes. Westford had a weak band D in VO2348.

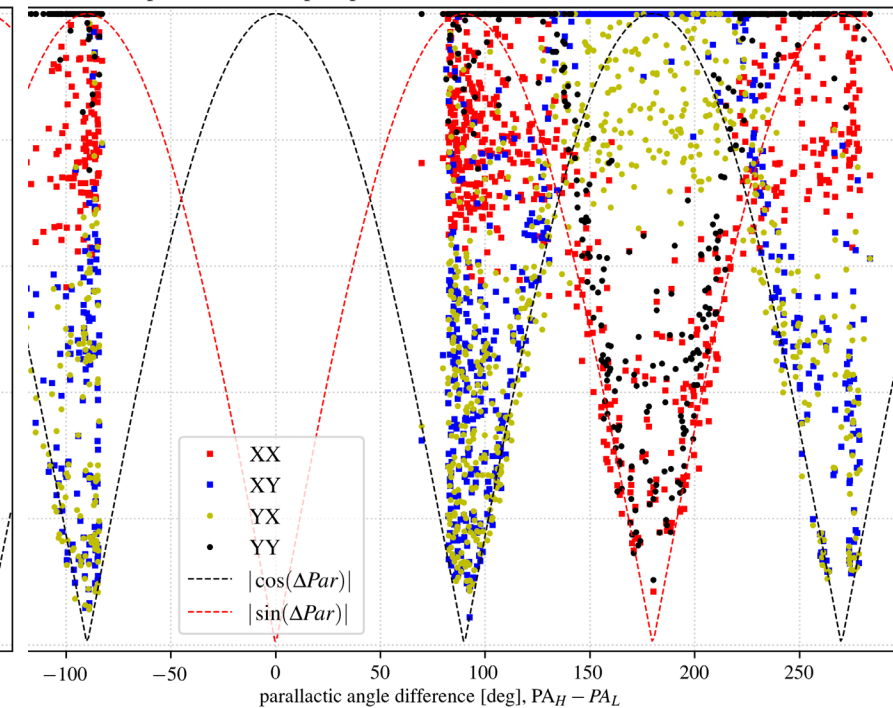
```
$ channel_amplitude.py cf_3826_GEHLNPSTY_pstokes E GNS I .
```

Test for polarization swap, experiment 3793 (vr2201), baseline HE, 845 scans



Kokee-Westford, cross-hands  
strong at 90deg; polarization is  
correct.

Test for polarization swap, experiment 3793 (vr2201), baseline LH, 752 scans

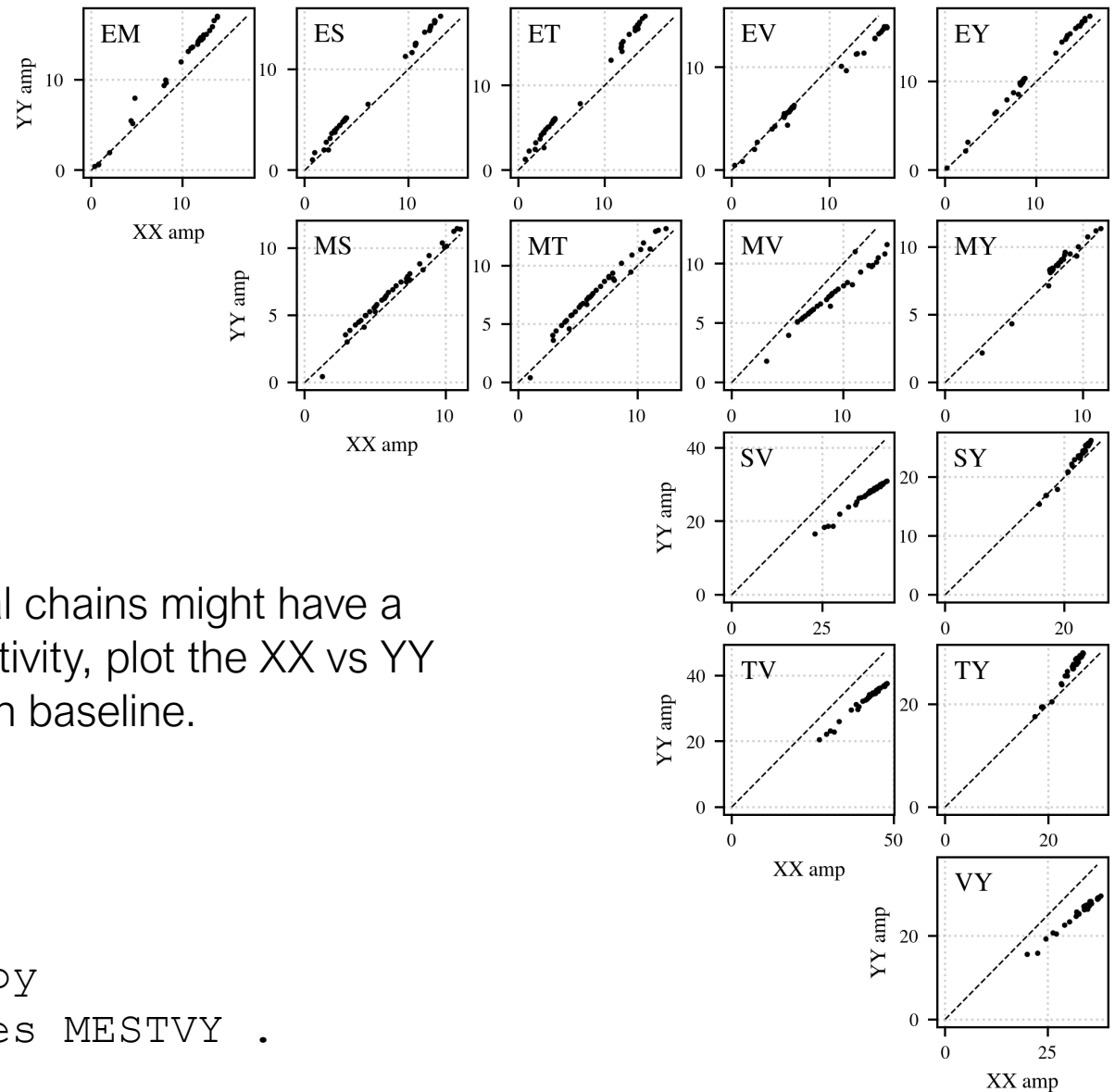


Kokee-Hobart, cross-hands  
weak at 90deg; polarization is  
flipped.

If you suspect an overall polarization swap, check the cross-hand polarization products (XY,YX) as a function of the difference in parallactic angle. This can also be a nice way to compare the strength of the X and Y signal chains.

```
$ parallactic_plots.py cf_3793_GEHLNSTVY_pcphases LH . -L
vr2201
```

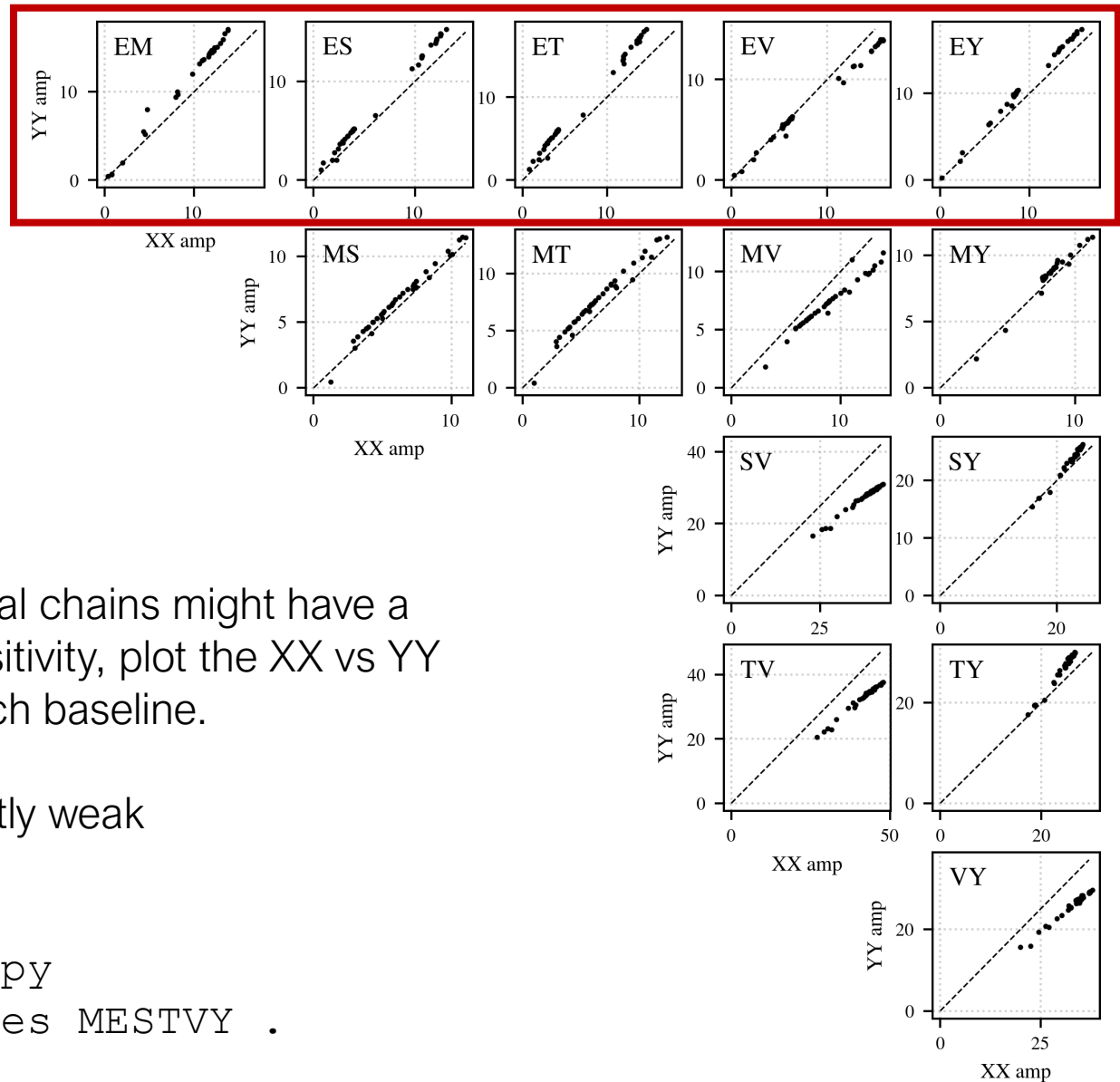
## Comparison of amplitudes for parallel-hands



If you think the X and Y signal chains might have a significant difference in sensitivity, plot the XX vs YY polarization products for each baseline.

```
$ compare_pol_hands.py
cf_3819_MESTVY_pstokes MESTVY .
```

### Comparison of amplitudes for parallel-hands

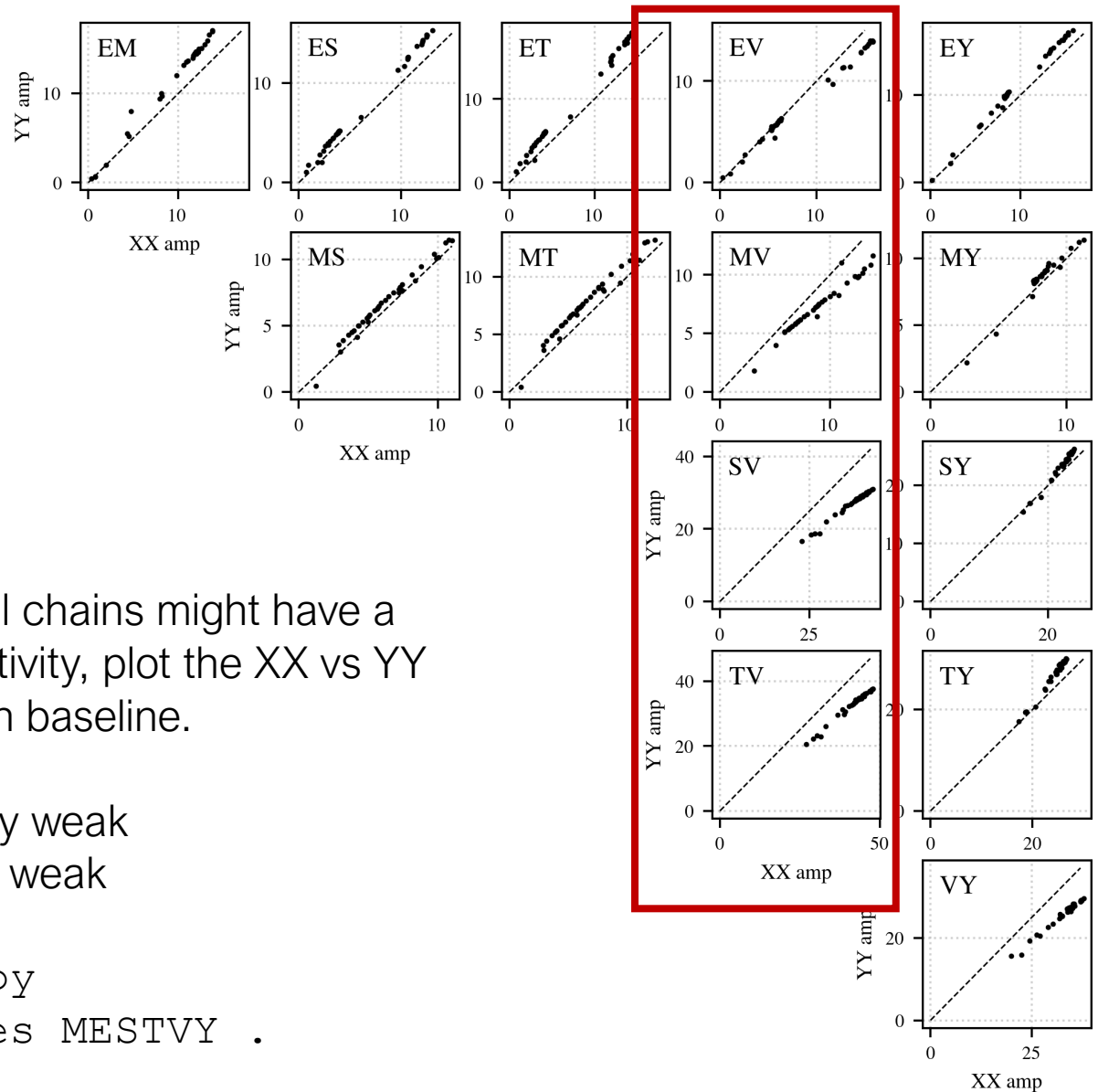


If you think the X and Y signal chains might have a significant difference in sensitivity, plot the XX vs YY polarization products for each baseline.

Westford: X-pol is consistently weak

```
$ compare_pol_hands.py  
cf_3819_MESTVY_pstokes MESTVY .
```

### Comparison of amplitudes for parallel-hands



If you think the X and Y signal chains might have a significant difference in sensitivity, plot the XX vs YY polarization products for each baseline.

Westford: X-pol is consistently weak

Wetzell: Y-pol is consistently weak

```
$ compare_pol_hands.py  
cf_3819_MESTVY_pstokes MESTVY .
```



Anything else we should be plotting?

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Problems tend to be unique one-offs, but making the right plotting tool can save a lot of time. Let us know if you have requests!