Some Cyclops Reductions: 2017-04-20

Cyclops Stokes Parameters:

Unweighted average over all feeds (w/ two working channels) of

$I \equiv X X^* + Y Y^*$
$Q \equiv X X^* - Y Y^*$
$U = \mathrm{Re}[2\, X Y^*]$
$V = \mathrm{Im}[2\, X Y^*]$

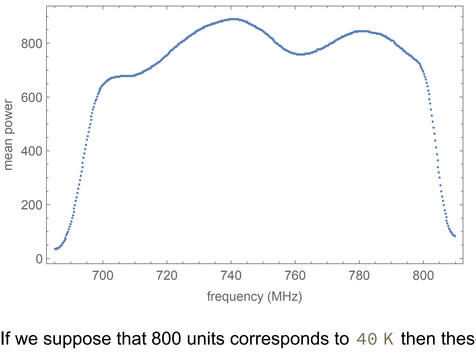
For unpolarized emission with ideal unpolarized “circular beams” with no gain corrections
$Q = U = V = 0$.

There will be gain different complex gains between X and Y polarizations.

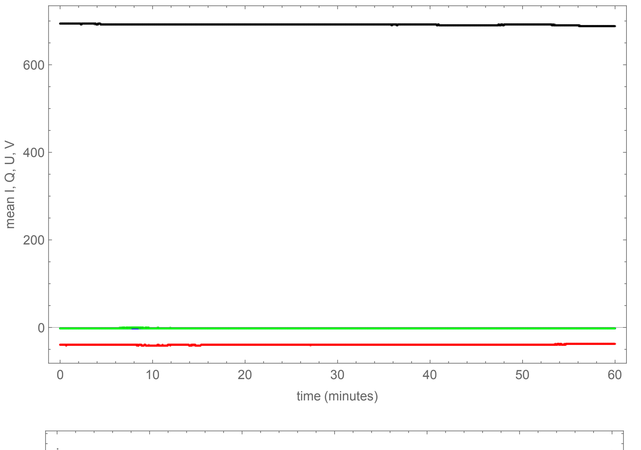
The X and Y beams will not be circular and will be very different in the side-lobes.
expect significant contributions to Q, U, V from side-lobes

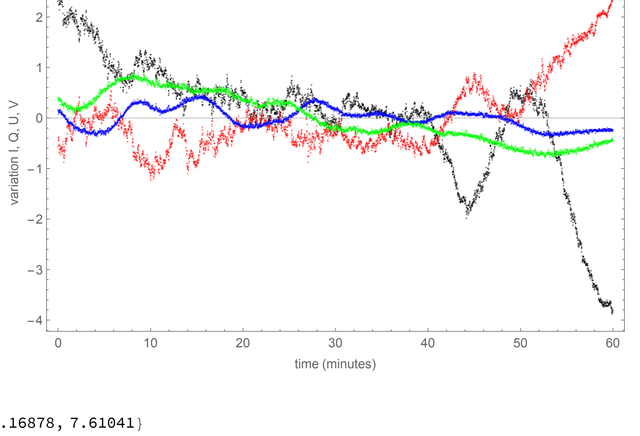
Considerations for North Pole data:
If only celestial sources:
I, Q, U will every half sidereal day
$V \to -V$ every half sidereal day
this is only approximately true for Sun, and Moon, which moves slightly each day.
Ground pickup will not exhibit this symmetry

For ideal circular



If we suppose that 800 units corresponds to `40 K` then these numbers are in units of ~`0.05 K`.



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{-9.16878, 7.61041}
{-5.89165, 7.38068}
{-5.33962, 4.44995}
{-6.74237, 5.83486}
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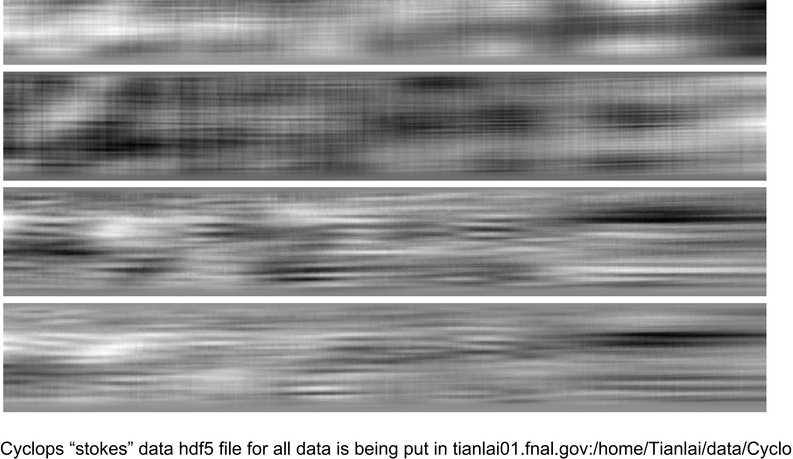

Cyclops “stokes” data hdf5 file for all data is being put in tianlai01.fnal.gov:/home/Tianlai/data/Cyclops/