



Motional Stark Effect Imaging on ASDEX Upgrade:

Notes from Jan 2014 -

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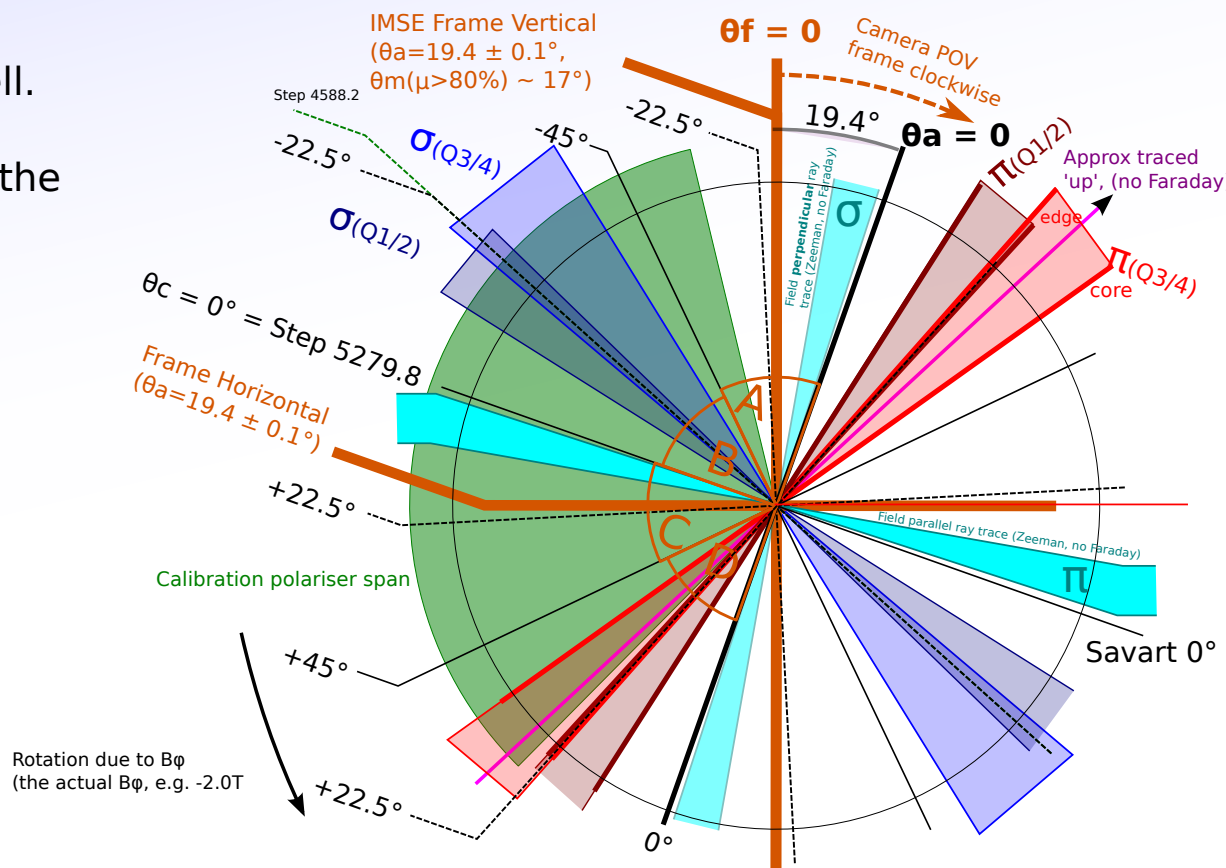
Oct 2014 Analysis



Setup for Oct2014

System is set-up roughly the same as the 2013 (+early2014) setup '2013A/B markers on the cell.

MSE filter is no longer required as we are using the ebay lasers to calibrate.



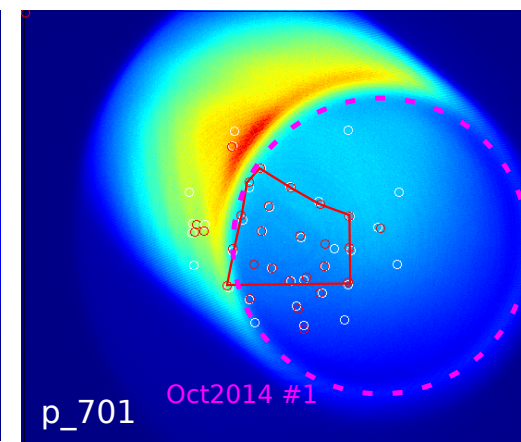
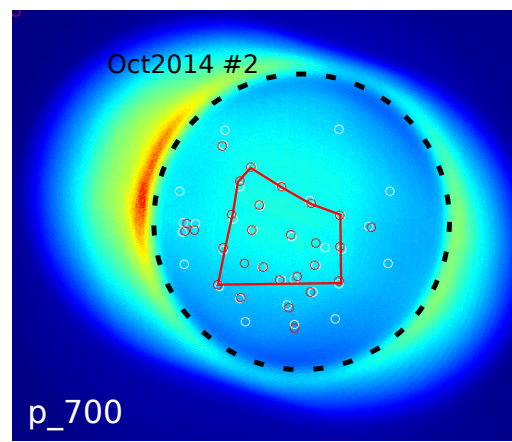
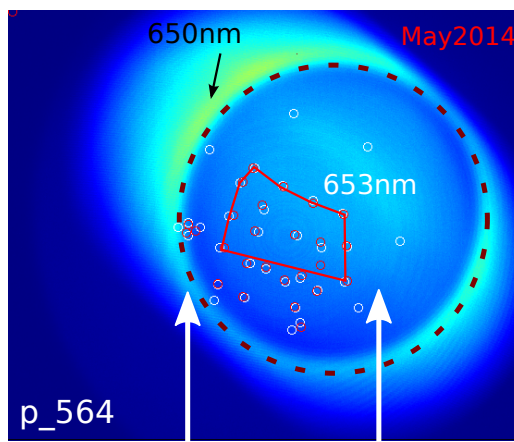
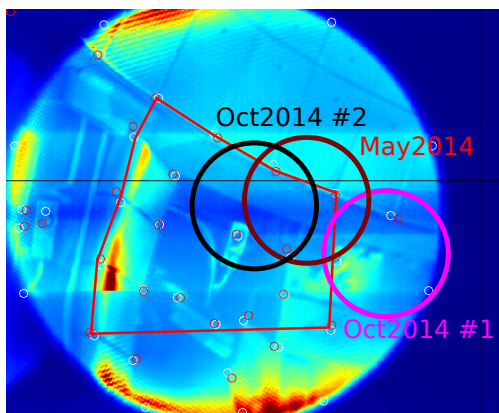
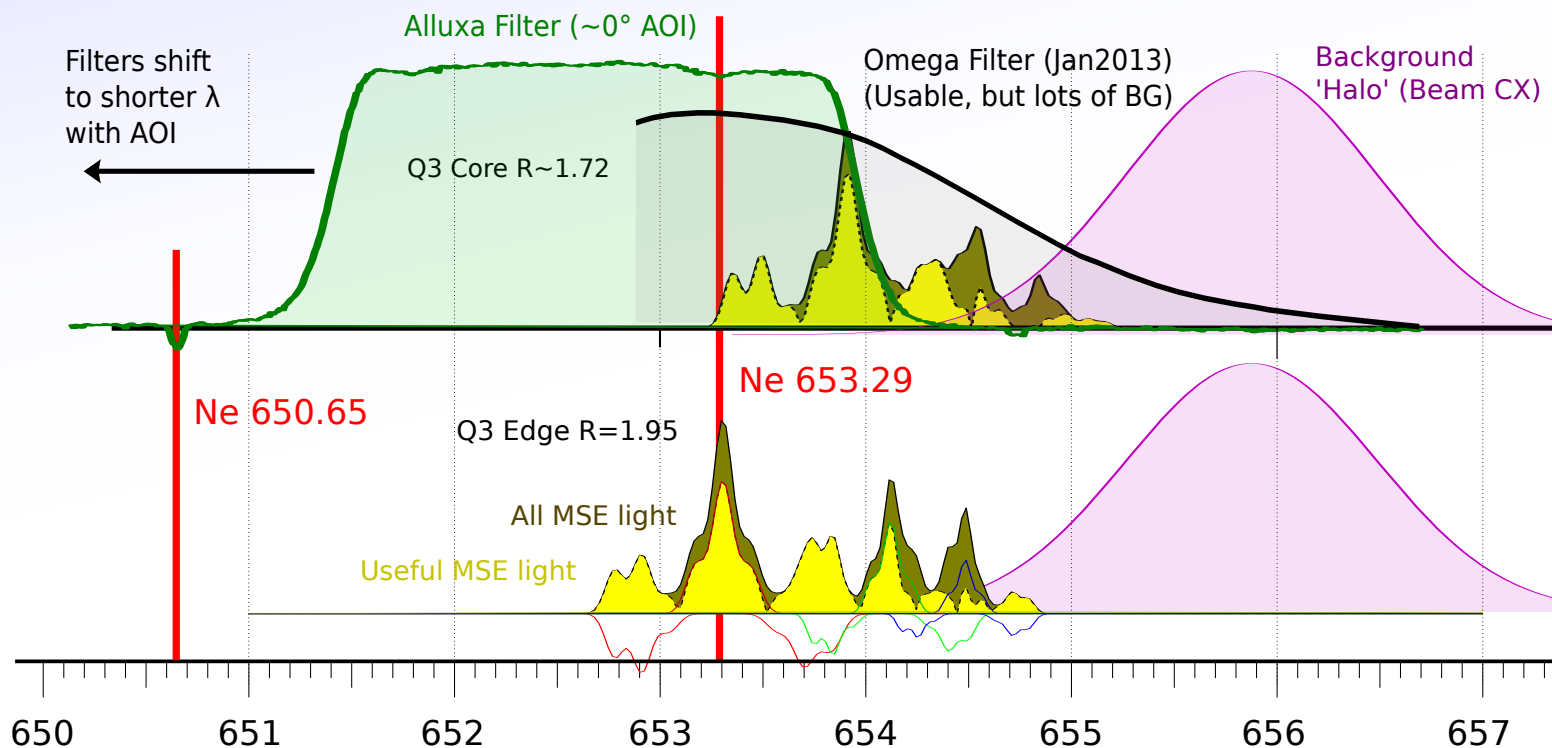
Filter AOIs

The spectrum and filter look something like this:

We want to get as much MSE light as possible with as little 'halo' as possible. The Alluxa filter will do this with near 0° AOI, but then shifts off for steeper angle.

CCD position relates directly to filter AOI so we can visualise the filter AOI by lighting the system with a Neon lamp and seeing where the 650nm Ne line enters the filter range.

Transform for oct2014 (p_705):

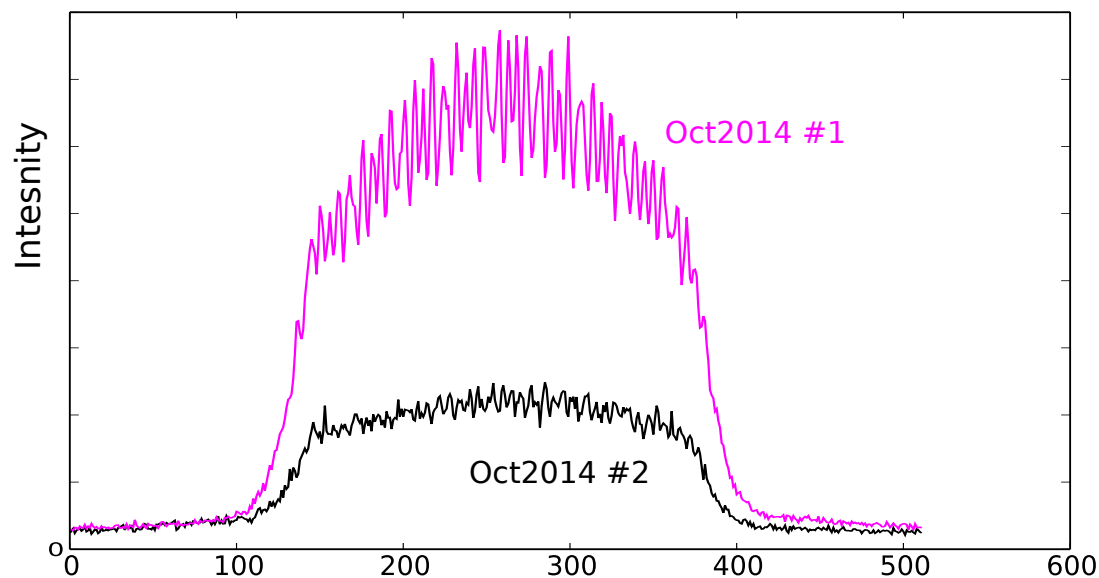
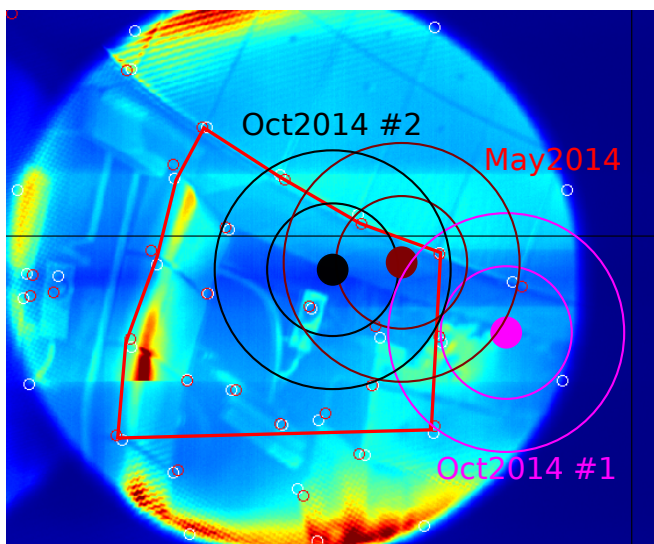
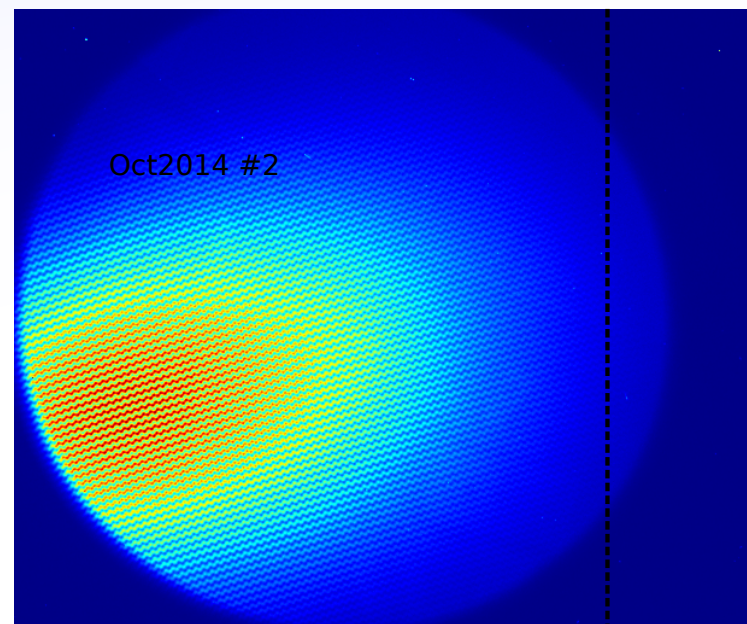
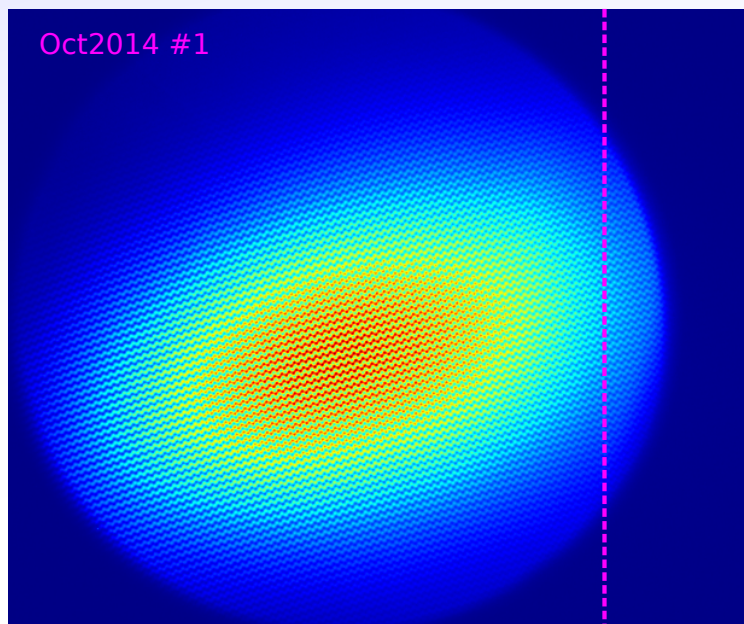


Edge Core

Filter AOIs

The more core-centered filter position is definitely better:

We gain S/N at the core which is important and weak and sacrifice S/N at the edge where we have plenty of light and the measurement isn't very useful.





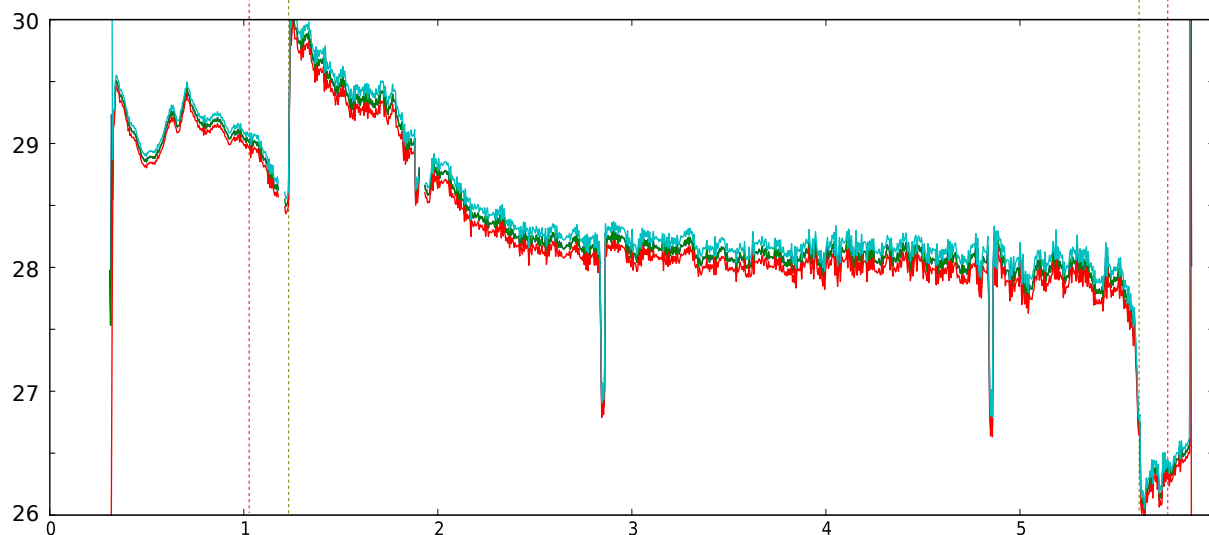
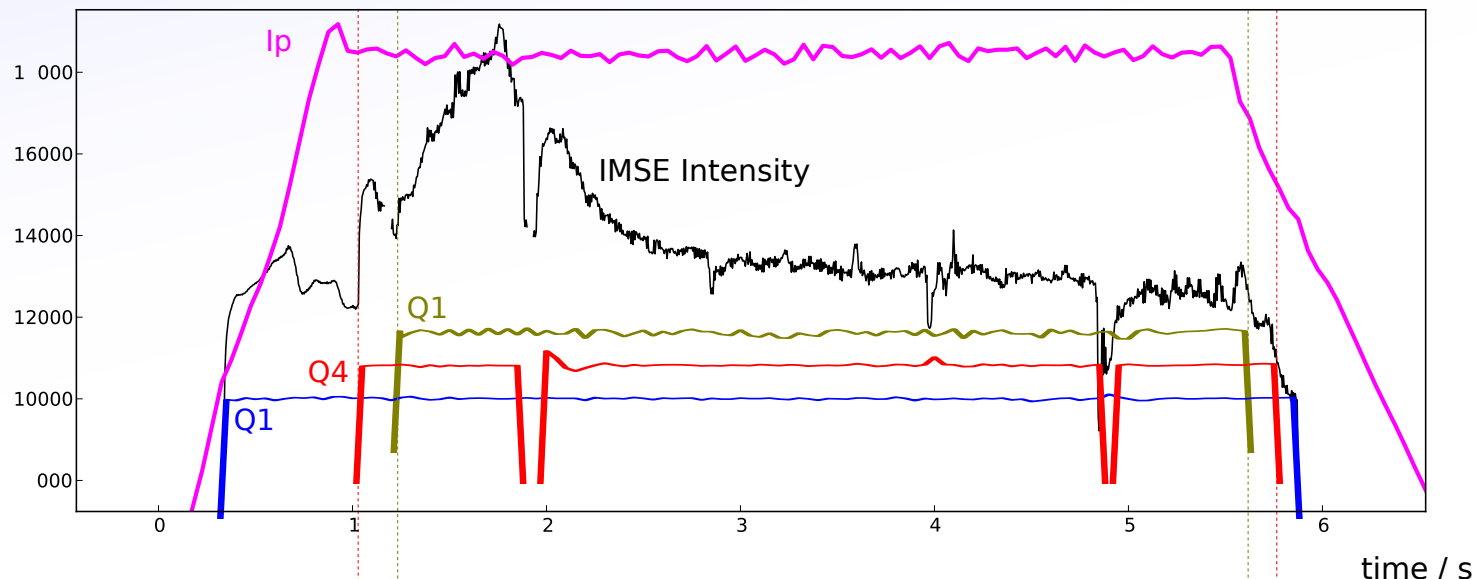
augOct2014 day 1 - Signal Quality

Some trigger and magnetic field issues again on the first day so missed the Std-Hmode. Lots of no beam shots, some shots missed altogether. One 30kV beam shot that appeared to have no beam signal.

Many shots this campaign will have multiple beams since box 2 isn't operational.

With Q3 as the first beam, in the most overlapping areas of the image, Q4 adds a significant intensity and Q1 doesn't.

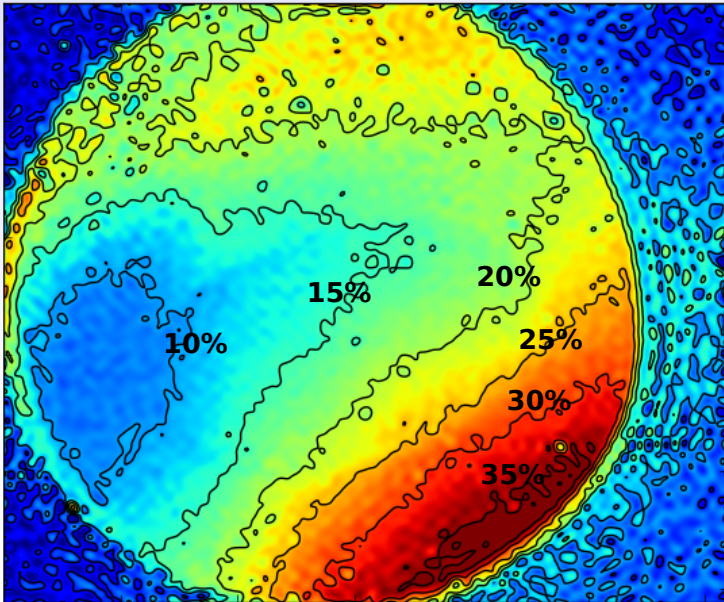
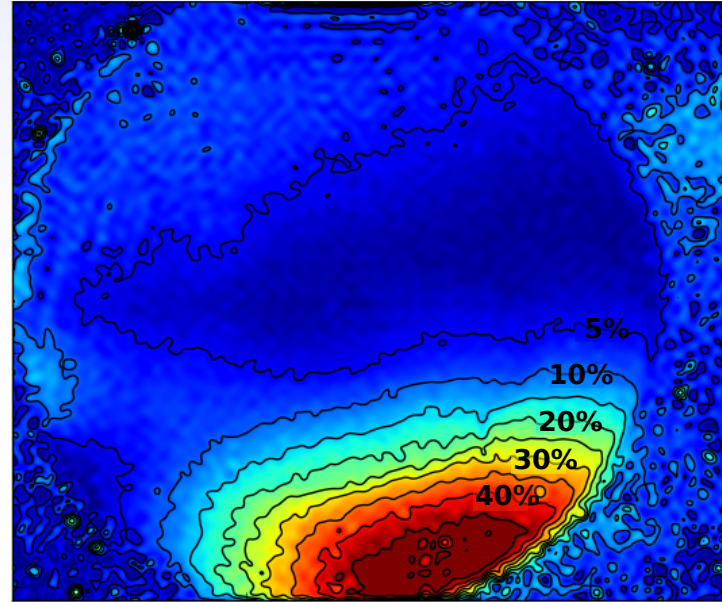
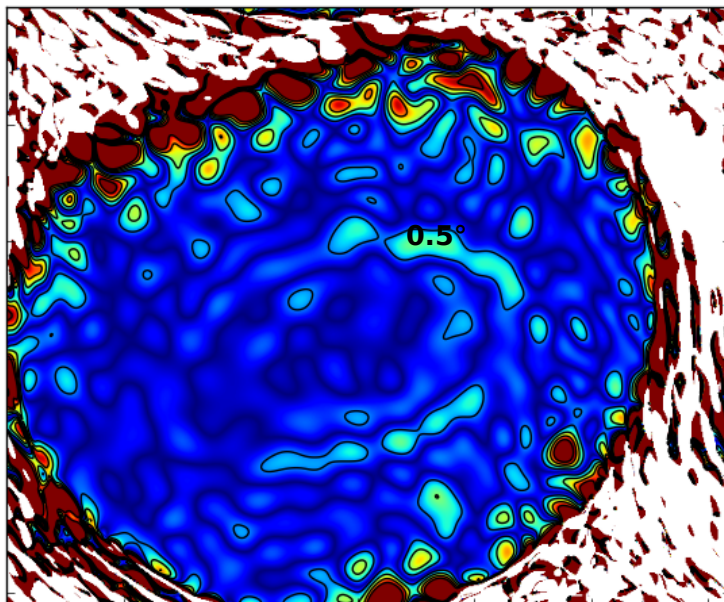
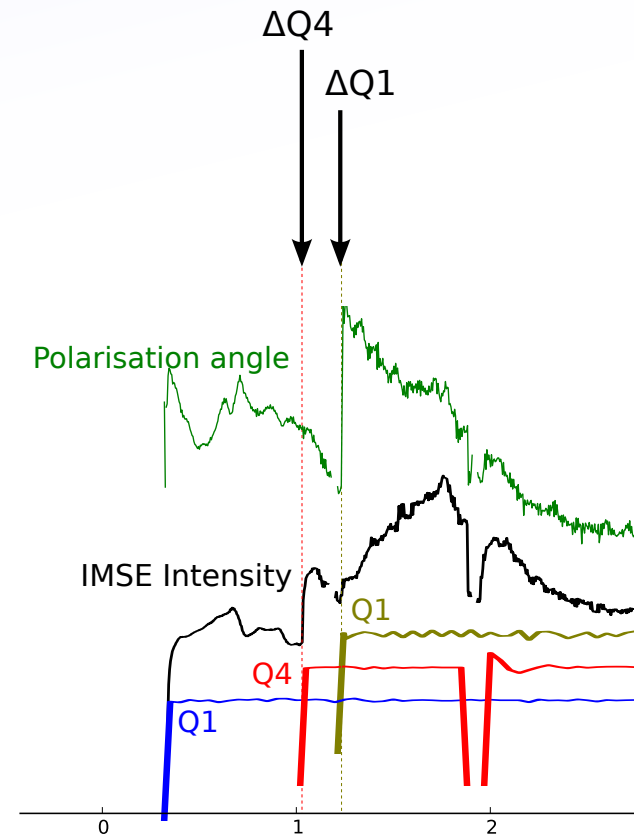
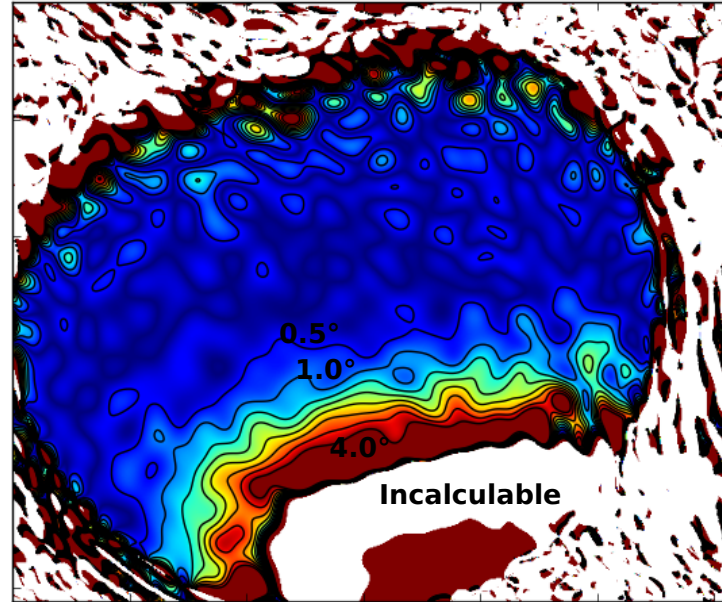
However, Q1 disturbs the signal much more than Q4. This is probably because Q4 has a similar polarisation and Q1 is $\sim 8^\circ$ different (beam angle).



augOct2014 day 1 - Multi-beam

p_707
Q1: f_154 - f_151
Q4: f_197 - f_193

To see the effect, we can look at the delta images of the image and demodulated angle:

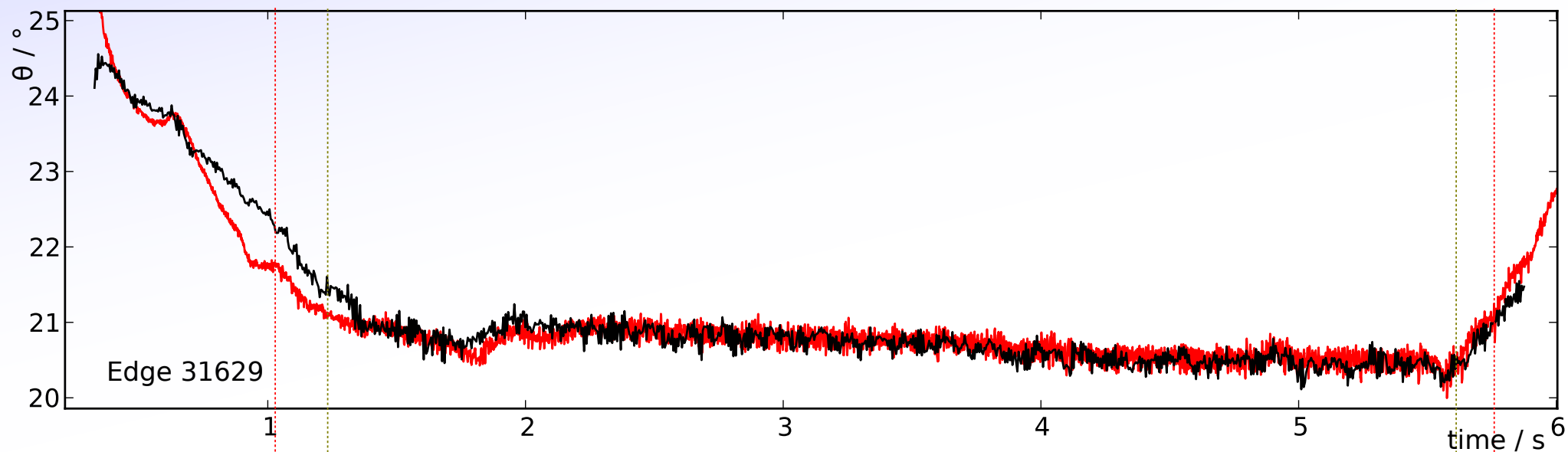
 $\Delta I(0,0)$ for Q4 $\Delta I(0,0)$ for Q1 $\Delta\theta$ for Q4 $\Delta\theta$ for Q1

So, we can probably do basic equilibrium analysis with Q1 active, and also with Q4 in certain areas of the image. At the very least the dynamics will still be valid.



augOct2014 day 1 - vs Equilibrium

Comparison to CLISTE is what we should expect. Good at $R \sim 1.95$ except in fastest parts of ramp:
(Ignoring some arbitrary offset)



But at the centre there is movement that CLISTE doesn't see (and some that it does and isn't there):

