These measurements of the ETMY charge were done manually using awggui for excitation and diaggui for data processing. The data taken took place between UTC (2014-08-12 17:17:00) and UTC (2014-08-12 19:09:00). NOTE: The ion pumps in ETMY station have been turned on since UTC 2014-08-11 16:44:00. We still have the new ESD cabling configuration where LL quadrant can be drove. We redo EMTY charge measurements before we bring cable configuration to the old way where LL was not driving. This is to see if charge is constant or rather is increasing which may be pointing to the ion pump being the culprit.

I drove a sinusoidal excitation at 4Hz and amplitude 30000 counts which is equivalent to 91.5 Volts on the ESD ($30000*20*40/2^{18}$, as the DACs drive +-10V and they are 18 bits and then we have an amplifier of Gain 40). Notice that this actuation signal amplitude is divided to the deflection measurements in the tables below to get the standardised plots at the end of this document.

Then we monitor the deflection of the ETMY mass both in Pitch and Yaw looking at the *oplev*. The *oplev* has been carefully centred to the QPD before the measurements.

The magnitudes of the deflection given below are in *urad* and are obtained through a power spectrum plot of the oplev pitch and yaw signals. This power spectrum was measured with a BW = 0.01Hz on the range between 1 – 5 Hz and averaged **3** times.

During the measurements the coherence between excitation and Pitch and Yaw was monitored to be sure that the excitation was observed. I also measured the phase (in degrees) of the transfer function between excitation and oplev pitch and yaw (the phase was measured to confirm it is 180 degrees different for the deflections with + and - BIAS). The same excitation was applied to the 4 quadrants of the ESD.

The ETMY pressure at PT-410 is 4e-8 good enough for these measurements. ISI Watchdog ST1 and ST2 green so no much drift of the oplev. Next I show the results:

Driving UR quadrant: **Note that the deflection for this quadrant at VBIAS -195 was very small in Pitch with low SNR (no much higher than 1) and low coherence of 0.8. The Yaw was better with coherence of 0.99 but not as good as in other measurements.**

V BIAS (Volts)	Pitch		Yaw	
	Mag (urad)	Phase (deg)	Mag (urad)	Phase (deg)
+390.5	11.618e-3	-13.5	9.161e-3	-14
+195.3	7.968e-3	-14.5	4.598e-3	-8
-195.3	0.591e-3 (low coherence)	-168	3.957e-3	166
-390.5	4.711e-3	166	8.813e-3	167

Driving UL quadrant: **Note that the deflection for this quadrant at VBIAS +195 was very small in Pitch with low SNR (no more than 2) and low coherence of 0.95. The Yaw was better with coherence of 0.99 but not as good as in other measurements.**

V BIAS (Volts)	Pitch		Yaw	
	Mag (urad)	Phase (deg)	Mag (urad)	Phase (deg)

+390.5	4.031e-3	164	1.471e-3	167
+195.3	0.989e-3 (low coherence)	-15	2.551e-3	-8
-195.3	10.090e-3	-12	10.586e-3	-14
-390.5	14.717e-3	-14.5	14.417e-3	-14

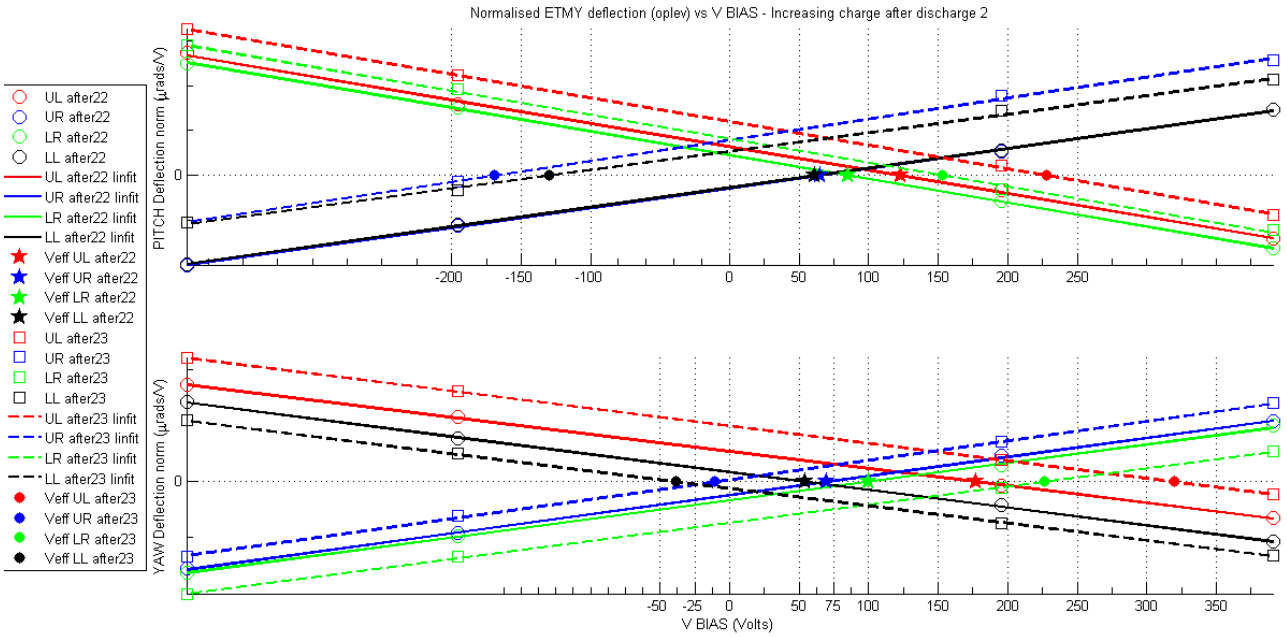
Driving LL quadrant: This is the first charge measurements we have for this quadrant.

V BIAS (Volts)	Pitch		Yaw	
	Mag (urad)	Phase (deg)	Mag (urad)	Phase (deg)
+390.5	9.60e-3	-13	8.611e-3	167
+195.3	6.451e-3	-11	4.915e-3	165
-195.3	1.530e-3	162	3.289e-3	-12.5
-390.5	4.767e-3	164	7.095e-3	-13

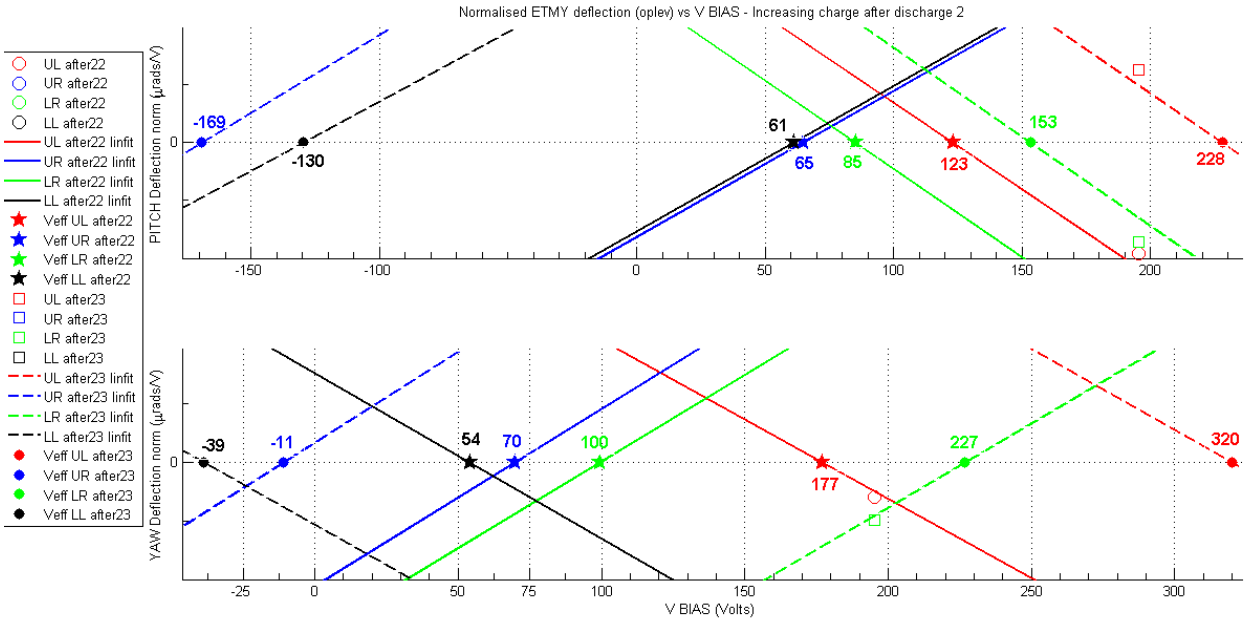
Driving LR quadrant: **Note that the deflection for this quadrant at VBIAS +195 was very small in Yaw with low SNR (no more than 2) and low coherence of 0.6. The Pitch was better with coherence of 0.99 but not as good as in other measurements.**

V BIAS (Volts)	Pitch		Yaw	
	Mag (urad)	Phase (deg)	Mag (urad)	Phase (deg)
+390.5	5.526e-3	162	3.483e-3	-13
+195.3	1.355e-3	180	0.723e-3 (low coherence)	-159 (low coherence)
-195.3	8.638e-3	-12.5	8.828e-3	168
-390.5	13.037e-3	-14	13.097e-3	167

Plotting the above results in the standard way "Normalised deflection [µrad/V] vs V BIAS", the normalisation of the deflection is by the amplitude of the excitation = 91.5Volt. I plot the new results in comparison with the results obtained yesterday (measurements 3 after discharge 2):



And next we zoom on the zero crossing:



	UL after22	UL after23	UR after22	UR after23	LL after22	LL after23	LR after22	LR after23
Veff PITCH [V]	123	228	65	-169	61	-130	85	153
PITCH slope [10^{-7} µrad/V]	-2.565	-2.606	2.1605	2.305	2.154	2.053	-2.612	-2.635
Veff YAW [V]	177	320	70	-11	54	-39	100	227
YAW slope [10^{-7} µrad/V]	-2.178	-2.226	2.428	2.489	-2.271	-2.215	2.374	2.308

NOTE: The labelling for measurements I came with is “after” (after discharge) “number” (number of discharge run) “number” (number of measurement). So the current measurement is “after23” and the one yesterday is “after22”