Experiment No.	Description	Justification	What do we want to learn?	Method	Issues	Duration (hours)	Dates	Machine setup/parameters
9. INJECTION MISMATCH	mismatch for	This was not possible last year until introduction of movable BPM		Measure injection mismatch with movable BPM depending on injection settings and steerers in injection line	Position needs calibrating.	1 day		
10. UPDATED COD MEASUREMENT		Check change in COD with introduction of second RF cavity, with new probes also	The effect of the 2nd rf cavity on the COD. The COD at position of additional probes.	Repeat COD measurement - without RF-2 on and with RF-2 on if available. Take measurements with all available probes. Adjust corrector magnet & take at least 3 sets of corrector strength data.	Will need to make sure injection is pretty good before attempting this. Should be done with optimised injection if possible.	1 day		
11. TUNE vs MOMENTUM WITH COD	Measure betatron tunes throughout acceleration range				Is the measurement different depending on whether we do step-by-step (in energy) or all in one measurement? The first one at least should be double- checked	1-2 days		
12. LONGITUDINAL TOMOGRAPHY	Need to get longitudinal tomography method working to use in RF optimisation	Direct observation of matching between the bunch and rf programme	Tomography to check longitudinal phase space and see why transmission increases/decreases. Coherent oscillation of bunch monitor can be used to check matching between beam and RF bucket.	Search optimised phi_s (frequency) and voltage to increase beam transmission	Need to implement Shinji's python script to make RF patterns	2 days		
13. RF OPTIMISATION		Significant improvement in efficiency seen by using theoretical k(r) needs confirming, this should improve efficiency further.	the real accelerator (rather than theoretical one!) Can we measure excitation of coherent	in the bucket may be excited and result in beam loss. Using real time spectrum analyser to	more 'basic' measurement than the longitudinal tomography method	3 days		
OTHER IDEAS								
14. TRANSVERSE COUPLING	Transverse coupling measurement	Ability to use large horizontal beams to mitigate space charge depends on how much coupling is present	Level of coupling in the FFAG	1. Use radial probe to scrape beam with acceleration and see decay (loss vs time) to measure beam size in horizontal. 2. Change radial probe position and see how this varies throughout acceleration cycle (does it decrease at some point due to coupling into vertical?). 3. Now vary injection matching and re-measure to see if the result changes as a function of injection matching.	Is the beam coming into the ring small enough to do this?			
15. RF STACKING		User request for low rep. rate but high current beam	Can we accumulate a high intensity beam?		Might take more time than is available in this run			
16. OPTICAL FUNCTION MATCHING	Want to measure and match beta functions too	-		Possibly use mismatch, filamentation should follow and then observe for which setting the minimum emittance growth occurs = matched?	Not sure how to measure at present			
17. HORIZONTAL PAINTING	Horizontal orbit mismatching to achieve painting	To determine optimal settings to reduce emittance growth in (particularly) vertical plane	Manipulate the closed orbit at the foil to decrease the foil hitting probability	Measure emittance growth in both horizontal and vertical for various injection settings	It may be difficult to shift the beam from the closed orbit if the beam size is too big!			
18. EMITTANCE GROWTH WITH HIGH BUNCH CHARGE								