

L2 RF Control Meeting 4-09-2009 -Notes

ATTENDEES:

Paul E., Joe F., Patrick K., Diane F., Ron A., Rick I., Juhao W., Kukhee K. Franz-Josef D.

The intent of the meeting was to determine what the Fast Feedback project is required to provide for L2 RF control, for successful operation in March. Also to determine what functionality may be useful in the near future, but is not required for March.

Decision: L2 RF will be controlled using the L2 phase shifter (Joe's method)

We discussed the different ways to control RF in L2 and decided to use Joe's method of controlling L2 phase and amplitude using 24-1 phase, 24-2 phase, L2 Phase shifter, and possibly the 24-1 and 24-2 offsets. Joe said he will review the code and let us know definitively if the 24-1 and 24-2 offsets are needed. As part of the Fast Feedback project we will deliver an L2 Amplitude and L2 Phase control.

Decision: 'Pattern-aware' Control will control on up to 4 patterns

We discussed the design of the 'pattern-aware' software, which allows for n patterns. We will initially (in March) provide control for up to 4 patterns. This means that each desired amplitude or desired phase that we currently control, will turn into a set of 4 amplitude or phase controls, with a settable pattern for each. (this will be true as well for the feedback corrector magnet BDEs)

Decision: The new L2 Phase and Amplitude controls will be 'pattern-aware'

We discussed the design of the 'pattern-aware' control of L2 RF and agreed that the new overall L2 phase and amplitude control will be 'pattern-aware'. The lower level 24-1, 24-2 phases and offsets, and L2 phase shifter controls will NOT be pattern-aware individually. Joe is to ponder this awhile and give us a final decision whether this limitation is acceptable for operation in March.

We discussed the various ways to command a 'pattern-aware' RF control. The three I noted are:

1) assign unrelated desired values for each 'pattern-aware' control. (eg: ADES1=2, ADES2=3, ADES3=0.5). This method may be used, for instance, when there are multiple undulator halls and one wants to run the linac as truly separate machines. The current feedback algorithms will also use this control scheme and maintain the necessary offsets internally.

2) assign a 'master' desired value and a set of offsets from the 'master'. (eg: compare with above, ADES1=2(master), ADES2=+1, ADES3= -1.5). This method is useful for applications such as Phase scans where it's easier to scan a 'master' desired value and have the additional patterns simply work with a constant offset that is set only once.

3) A feedback may want to control the RF (or magnets) with an 'average' and a 'difference' value.

Implementing 1) is most generic and already included in the Fast Feedback schedule.

Implementing 2) and/or 3) in the actuator (as opposed to the application that uses the RF control) will be additional work, and it did not appear to be required for successful operation in March. I would prefer to leave that as a goal or phase II rather than a requirement for March. I need a final decision on that.

ACTION ITEMS:

- Joe to report if 24-1 and 24-2 phase offset controls are used in the L2 phase/amplitude implementation.
- Joe to give final decision whether limiting 'pattern-aware' control of L2 to the new phase and amplitude controls is acceptable for March operation
- Paul E./Joe F. - final decision on whether we are required to implement a master/offset control scheme in the actuator for March operation.
- Diane & Kukhee to estimate effort and schedule effects of the new requirements.