PS/LP Note 94-29 (INFO)
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AN OUTLINE OF THE PROGRAMME FOR THE CTF - RUN No.2, STARTED 5/07/94

1. The rf conditioning of the gun is done with a Cs2Te cathode.

We want 100 MV/m. Thus PGI = 6 MW which is obtained with a PKI98 of about 19 MW. As we had problems with rf power calibration, we should check the beam momentum right from the start.

2. The rf for the booster

In our nominal scheme the input power PBI = 6 MW as for the gun, resulting in 60 MV/m. Starting with the nominal levels we can go to higher levels later. The phase shifter is guaranteed up to 10 MW, but will likely stand somewhat more. We can consider PKI = 24 MW and get about 10% more field.

3. To higher gradients in LAS

With PKI97 = 30 MW (PFN = 36 kV) we double the input power to LAS. The gradient becomes 17.3 MV/m, the non-load energy gain 78 MeV.

The max E can become 90 MeV, hopefully with a beneficial effect on the wakefields. But the probe beam was designed for a max E of 75 MeV. Thus, to calibrate the field generated in CAS we need a run with a reduced E or use an energy degrader as was considered from the start (BHZ500 was at 87 A during the last run'93. max current 100 A).

4. Laser and pulse train generator

We expect to get more 30 GHz power from TRS and therefore we should make a few single bunch measurements only (no ptg by-pass and no variable spot size). Use the ptg as used at the end of run 1 : use bunch 1 for setting-up and bunch 2, 3 for a 'long pulse' experiment. Laser spot on cathode uniform and diam. 12 mm.

5. Measure the gun beam with the booster at min. field : p and bunch length

Repeat the p - measurement done on 5/05/94, log p. 12, on bunch 1. But, the 'laser phase' control is now acting on the phase of LAS. We shall use the 'gun phase' and change the programme.

Use one charge below 1 nC and another at about 2.5 nC (equal or just above the one used in the 24 b-train at the end of last run). For the booster on its two non-accelerating phases measure the bunch length with TCM390C. Make a long laser pulse with pulse 2 and 3. Repeat the previous bunch length measurement.

6. The gun - booster ensemble : measure the p and the bunch length

Adjustment on the MTV386 for min p - dispersion.

Install FC and make comparison with UMA375 (the UMA signals will be attenuated by a factor 10 and a comparison with the FC is needed). Install 1 mm slit in front of FC and measure the p - dispersion.

Install the wire - charge collector on the BHZ385 output and make a p - dispersion measurement. If OK, then leave it in with MTV386. Repeat the long bunch measurements of section 5.

7. Setting-up of 24 - bunch train

As usual, start with bunch 1 (max charge as used under section 5). For max gradient in LAS find phase for min disp. on MTV440. Depending on long-bunch results obtained before, measure bunch lengths in TCM445T.

Setting the intra-bunch spacing, checking with 30 GHz power reading by adding to bunch 1 the one to be set, checking/adjusting the different bunch positions on the pc. Compare the UMA 375 with the FC behind BHZ385 with an adding-bunch experiment.

During the train optimization look at the bunch train before and after the TRS and at the reflected power signals as well.

8. Beam in the CLIC-BPM line

As we removed the collimator we should have a look at the position stability.

9. Testing the Uppsala PU

A questionnaire of scheduling after the train has been set-up.

10. Probe beam for comparison with the 30 GHz power

Lower the beam p to get it passed BHZ500 onto MTV605.
Optimise the bunch train etc.
Worse beam at lower gradient in LAS ?

11. First tests of the beam emittance programmed by

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