AP video, Sep 9, 2003

DTL COMMISSIONING STATUS

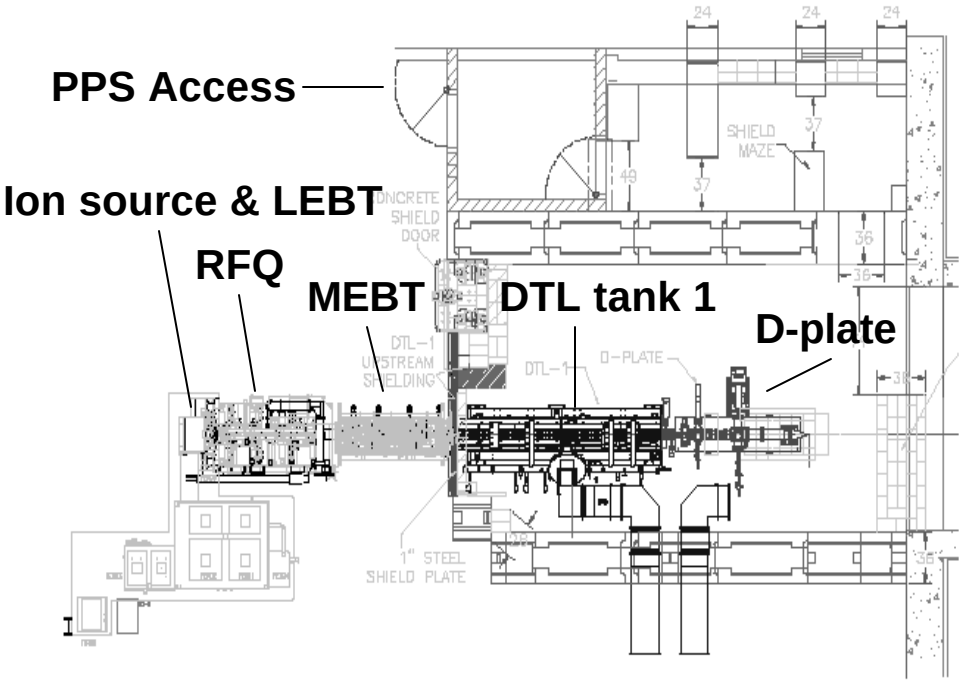
Eugène Tanke

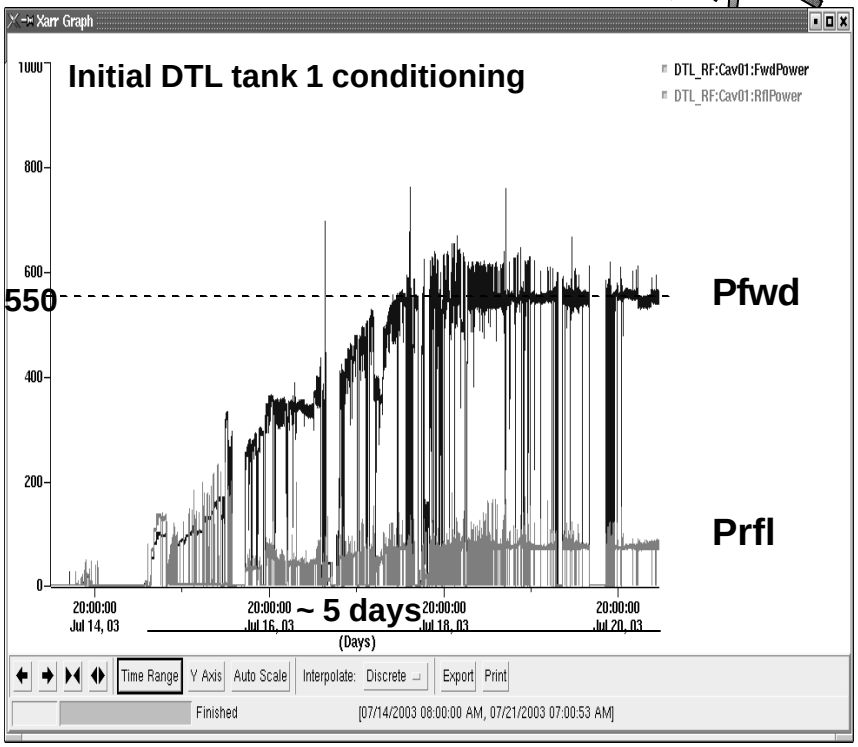
DTL-CCL commissioning area manager, SNS/ORNL

S.Henderson, S.Aleksandrov, D.Jeon, G.Dodson, M.Giannella, T.Williams, L.Kravchuk

Crew of 13 Chief Operators/AP Operators

RF conditioning goals for DTL tank1 were achieved in July 2003



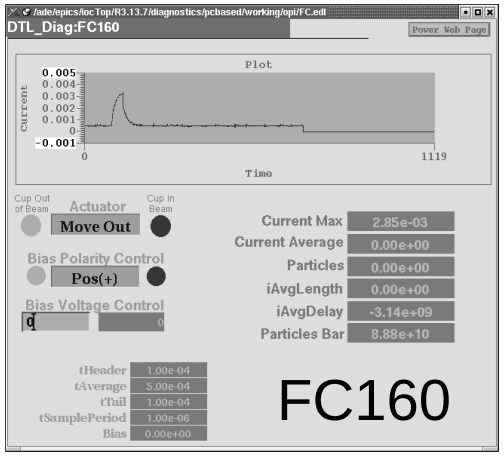


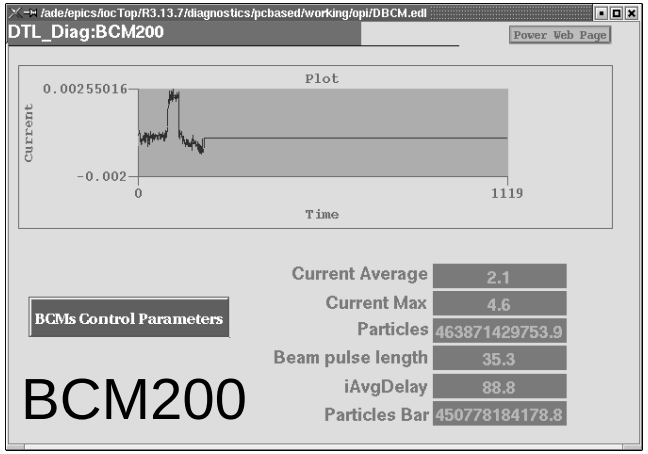
Initially: Pfwd=550 kW, 1 ms, 30 Hz

Achieved: Pfwd=650 kW, 1 ms, 30 Hz

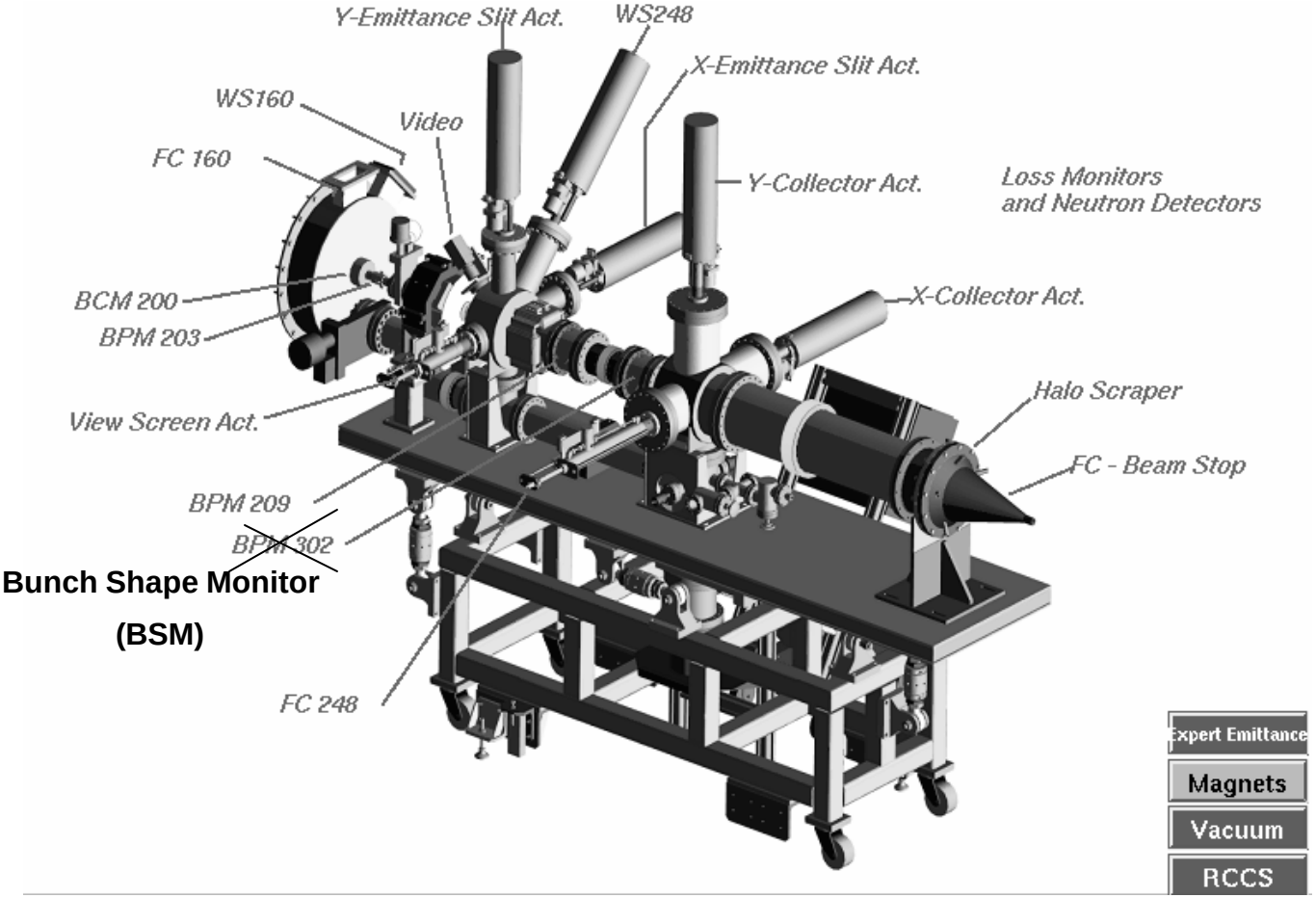
From conditioning to commissioning

- **14-Aug-2003 ARR meeting conclusion: 12 pre-start items**
- **21-Aug-2003 12 pre-start items addressed; response handed to ARR committee**
- **26-Aug-2003 ARR committee formally announces DTL1 ready for beam**
- **27-Aug-2003 9 mA of beam in MEBT FC/beam stop**
- **28-Aug-2003 5 mA of (apertured) beam into DTL1,**
  4 mA at output of DTL1
  RFQ transmission versus RF amplitude
  First acceptance scans

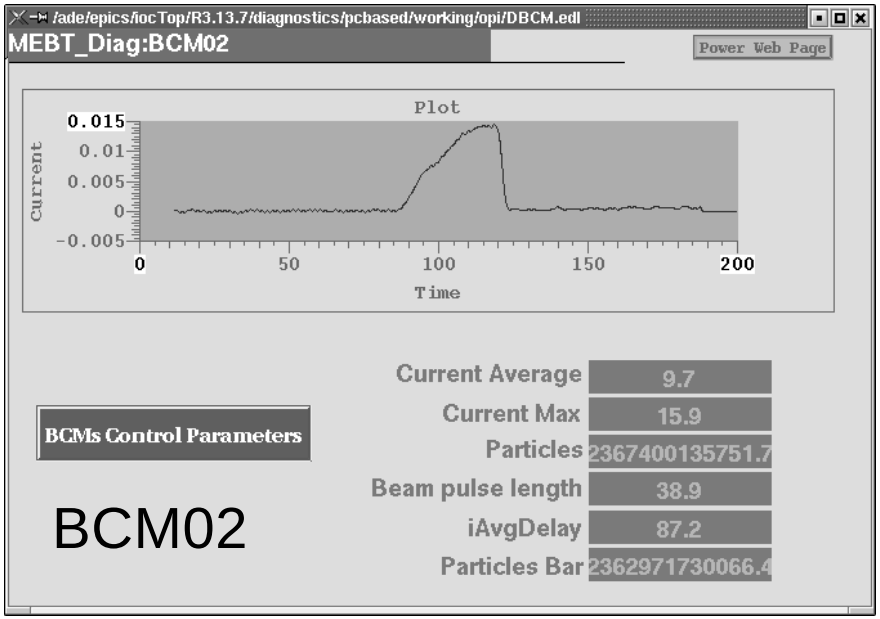


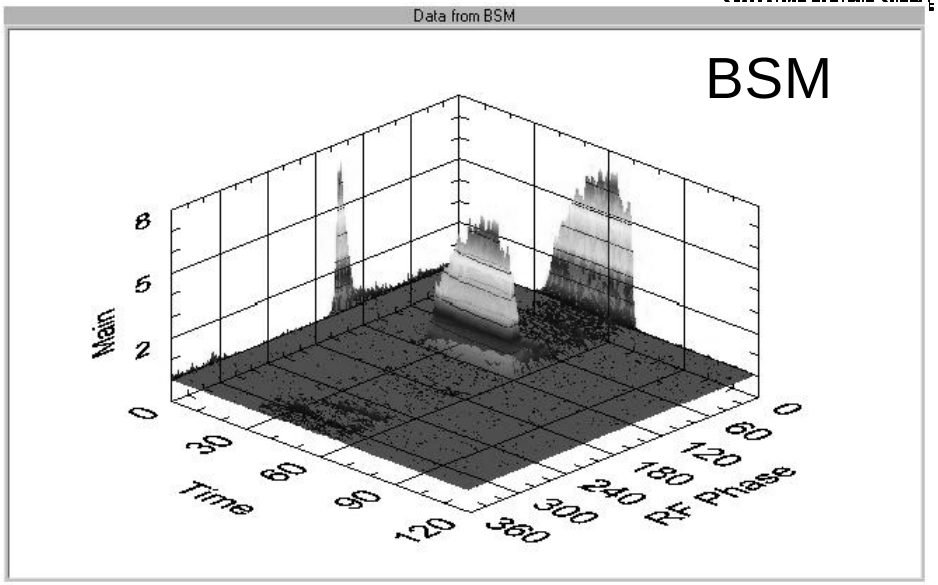


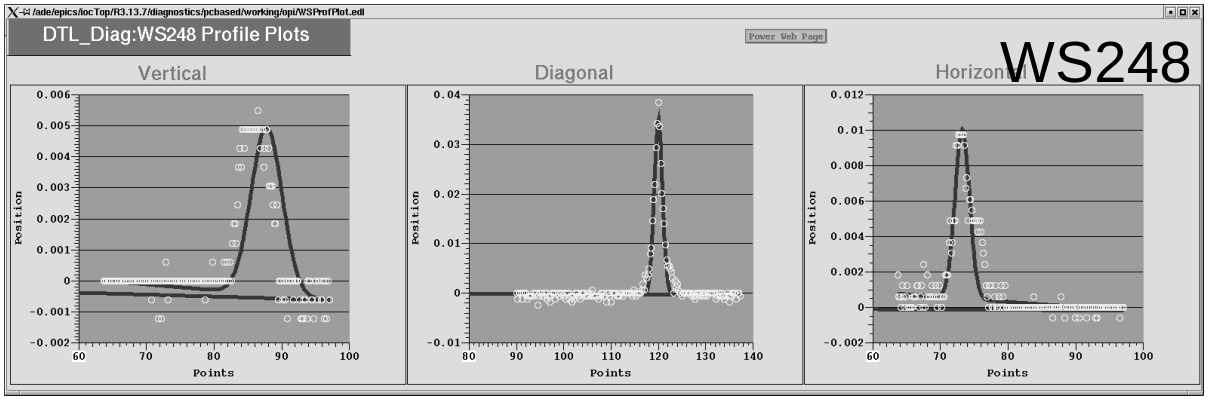
Layout for Diagnostics on D-plate



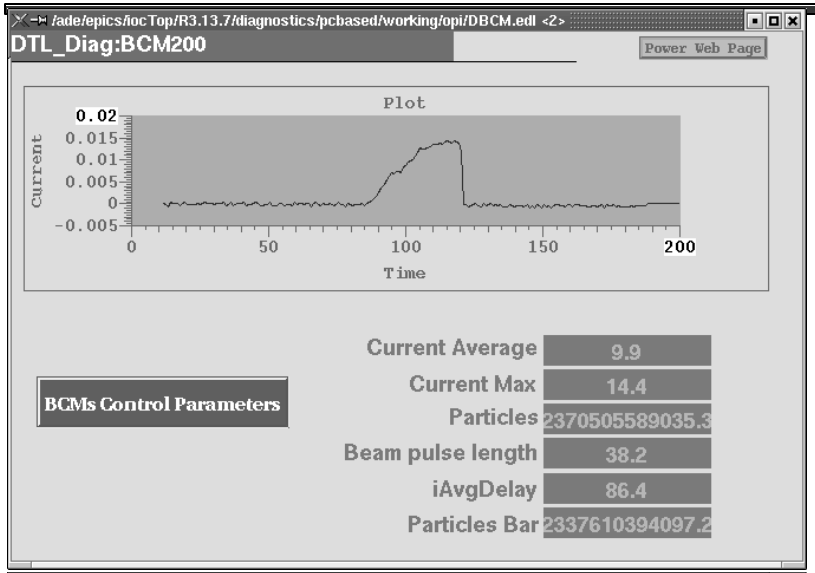
Diagnostics have been improved and/or tested (with beam)

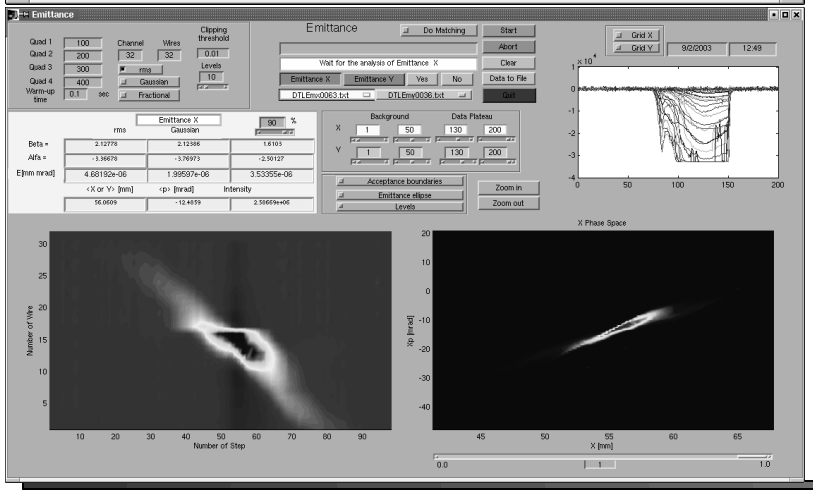


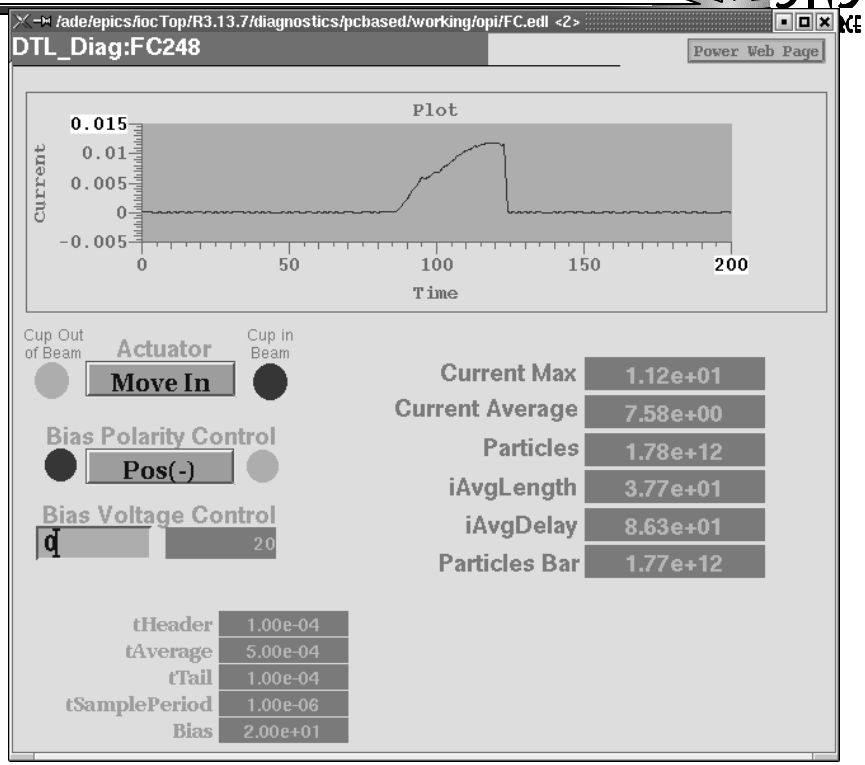




Investigation with non-apertured beam started 1-Sep-03; Maintenance day: 4-Sep-03







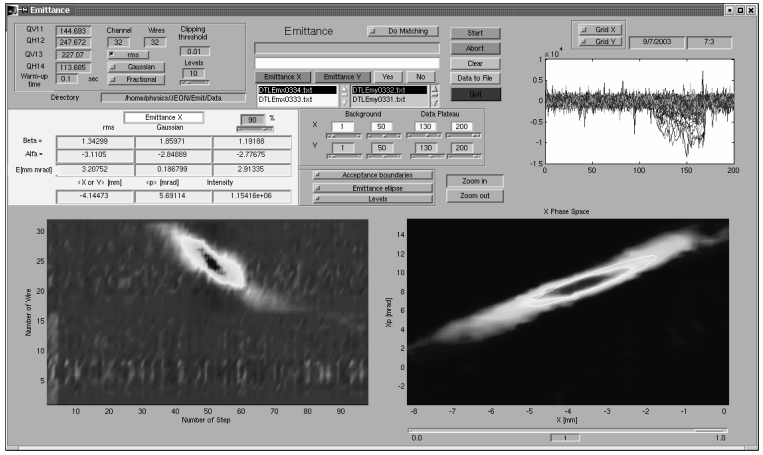
~100% transmission through DTL1

Typical beam timing settings:

3Hz, 30 microsec

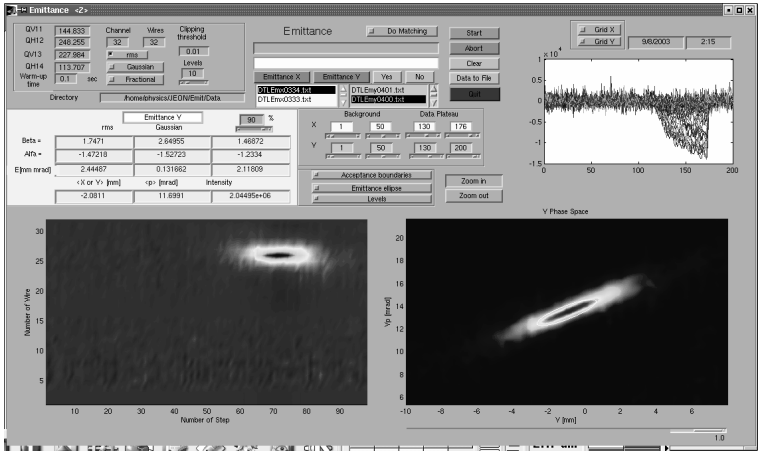
Work started over the past weekend

- Bringing Differential BCM (DBCM) into operation (will allow operation with higher duty cycle)
- New 40MHz reference line signal to MEBT rebuncher LLRF systems was provided --> reduced jitter
- Phase scans and more emittance scans (data are preliminary):



H emittance» 0.2 pi.mm.mrad

FE software analysis-> 0.26 pi.mm.mrad

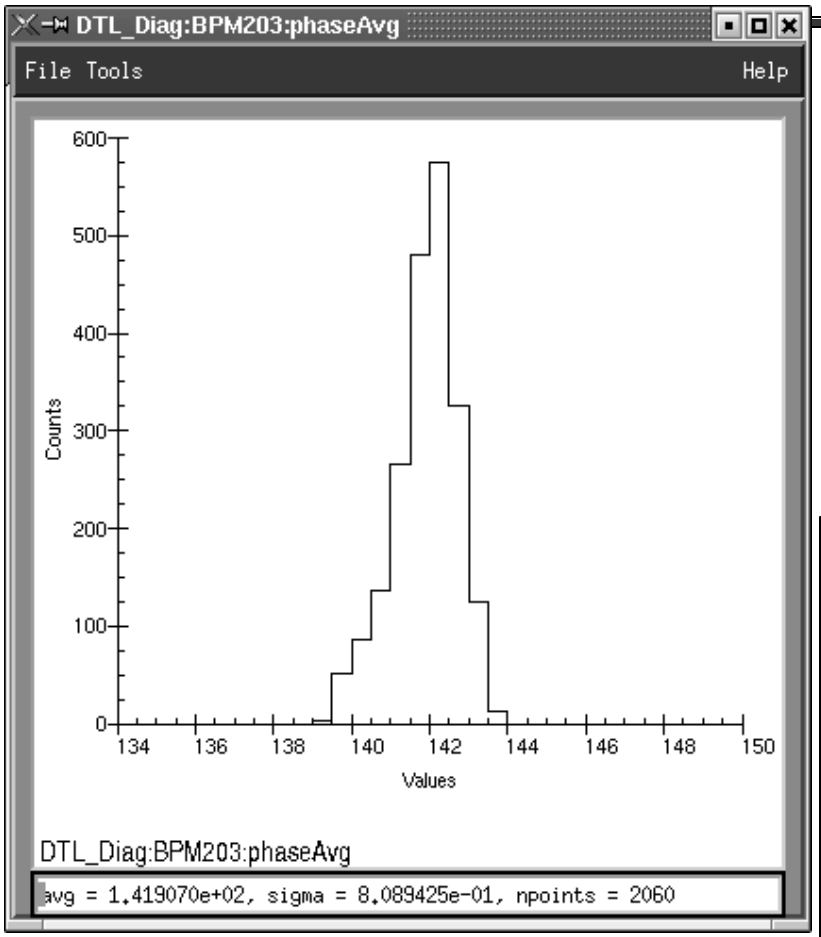


V emittance» 0.13 pi.mm.mrad

FE software analysis-> 0.2 pi.mm.mrad

These are normalized emittances

Some achievements so far & current status/plans



Phase jitter as observed on DPlate BPM203

Sigma < 1 deg

Achieved

Beam seen at the right energy out of DTL1

100% transmission through DTL1 at 14 mA

Peak current above 20 mA behind DTL1

Current status& some plans

MEBT rebuncher calibrations (RF)

Put DBCMs into operation

Rebuncher phase& amplitude scans (verify by observing D-plate BPM & BSM signals)

Verify DTL1 phase&amplitude setting

Measure x,y output emittance as function of last 4 MEBT quads