Experimental Program for the CESRTA Data-Taking Period November 25 – December 20, 2012

Low-emittance tuning (LET)
Intra-beam scattering (IBS)
Beam-size measurements in L3 with new PMTs (vBSM)
Electron cloud dynamics and instabilities
Time-resolved RFAs/TE-wave in L3
Shielded-pickups/TE-wave at 15E/W
X-ray beam size monitor development (xBSM)

Further proposals welcome, but scheduling constraints require them to be made ASAP !

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CESRTA Collaboration Meeting

9 October 2012

Low-emittance Tuning

Operating conditions at 1.8, 2.1 and 2.3 GeV

New C-line xBSM optics chip

New D-line windowless operation

Use of vBSM for vertical beam size measurements with π-polarisation, interferometer

Use of vBSM for horizontal beam size measurements with PMT array

Search for additional sources of emittance dilution

Intra-beam scattering

New operating conditions at 1.8 and 2.3 GeV

Standard set of measurements to study reproducibility at 2.1 GeV

Exploit new vBSM vertical beam size measurement

Measurements with the L0 wigglers off and zero dispersion in the RF cavities

Vary bunch lengths and vertical beam size

vBSM development

Slits with wide separation

Short-wavelength bandpass filter

Use π-polarization with PMT array

Magnify source image

Software and hardware development for IBS experiments

Horizontal beam size measurements

Electron cloud dynamics

30-bunch positron trains exhibiting head-tail instability

- dependence on bunch spacing in multiples of 4 ns

- dependence on vertical beam size

Head-tail instability with electrons varying chromaticity

Precursor bunch studies to characterize first-bunch blowup

- dependence on precursor bunch time

- dependence on precursor bunch population

- investigate effect of turning on solenoid windings to limit streaming

Reproducibility of previous observations (see table)

Single-bunch excitation with xBSM measurement

Kiran's table of cloud dynamics measurements

	Train bunch current (mA)	Lead Bunch current (mA)	Energy (GeV)	Bunch spacing (ns)	Nr of bunches	1st bunch blow up	2nd bunch blowup	Date	Precursor bunch test
1	0.75	0.75	2	4	30	yes	yes	Apr 12	no
2	0.75	0.75	2	8	30	yes	yes	Apr 12 June 11	yes
3	0.75	0.75	2	12	30	yes	no	Apr 12	yes
4	0.75	0.75	2	14	30	no	no	Apr 12 June 11	N/A
5	0.75	0.75	2	16	30	no	no	Apr 12	N/A
6	0.75	0.75	2	20	30	no	no	Apr 12	N/A
7	0.75	0.75	2	24	30	no (?)	no	Apr 12	N/A
8	0.75	0.75	2	28	30	no(?)	yes(?)	Apr 12	no
9	0.75	0.75	4	4	30	no	no	June 11	N/A
10	0.75	0.75	4	4	45	yes	no	June 11	yes
11	0.50	0.50	2	8	45	no	no	June 11	N/A
12	0.50	0.75	2	8	45	yes	no	June 11	no
13	0.75	0.50	2	8	30	yes	yes (bigger than 2)	June 11	no
14	0.50	0.50	2	4	45	yes	no	June 11	no

X-ray beam size monitor

Compare coded aperture and pinhole at super-low beamsize (5 μ)

- coupling scans

- dependence on bunch current

- electron cloud study

Measurements at 4 GeV

Effect of feedback on ec-induced blowup

Burn test of the Si optics chip following CHESS run

Shielded pickups and TR-RFAs with correlated TE-wave measurements

New vacuum chamber characterizations at 15E/W

- uncoated aluminum and TiN-coated aluminum
- two-bunch spacing scans, e+ and e-, 2.1 and 5.3 GeV
- 10- and 20-bunch trains
- dependence on bunch current
- solenoid field scans with new Helmholtz coils, 2.1 and 5.3 GeV

New vacuum chamber characterizations in L3#1-4

- round smooth and grooved chambers, uncoated and TiN-coated aluminum
- 10- and 20-bunch trains
- 10-bunch trains with witness bunches
- chicane dipole field on/off
- dependence on bunch current
- chicane ramp with high bunch current in 20-bunch train