Title: **xBSM December 2012 Machine Studies**
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Rev: **C**

Experimental Setup:

Initial Line Alignment (6 hours):

- Initial setup after installation (**once per line**)

Detector Alignment Study (4 hours)

- Rotate detector versus PH and CA and find minimum beam size
- Beam axis check (knob scans?)

Pinhole Optic Width Setup (1 hour)

- **For each energy**

DAQ Timing Setup (2 hours)

- Initial time in (**once per line**)

Experimental Tune Up (1.5 hours)

- DAQ Detector Calibration
- DAQ Pedestal Collection
- DAQ Timing Trim
- Coupling Scans

Instrument Systematics Study:

Bunch To Bunch Crosstalk (1 hour)

- Load a single bunch and collect many bunches and many turns
- Vary the current from 0.5 to 4 mA

Gain Calibrations/Linearity Check (2 hours)

- Use straight through beam from 0.25 mA to 10 mA at 2 GeV
- Collect single bunch many turns
- White beam

Large Turn Count Acquisitions (2 hours)

- Collect 300k turns over a range of currents, single bunch
- Collect synchronous BPM measurements

Timing Sensitivity Measurement (1 hour)

- Trim timings and collect 0.75 mS single bunch data
- Introduce 20 pS shifts in all timings and collect data

Detector Alignment Study (4 hours)

- Rotate detector versus PH and CA and find minimum beam size

Optics Research:

4 GeV Tuned Beam Imaging (4 hours)

- Smallest beam size at 4 GeV CA images collected with slow and fast readout

HE Optic Burn Test 5.3 GeV (2 hours)

- 5 um HE chip
- D Line optic
- 250ish mA
- Imaging before and after

4 GeV Tuned Beam Imaging (2 hours)

- Smallest beam size at 4 GeV CA images collected with slow and fast readout

Smallest beam calibrations (4 hours)

- 2 GeV XR2M or Norm
- Coupling bump scans
- Multiple current levels

Filter Response (3 hours)

- Diamond, Aluminum, Molybdenum
- 1.8, 2.085, 2.3 GeV
- PH and CA

Bunch Slicing:

New Diode Response (4 hours, end of run)

- Collect DAQ and scope traces of diode response