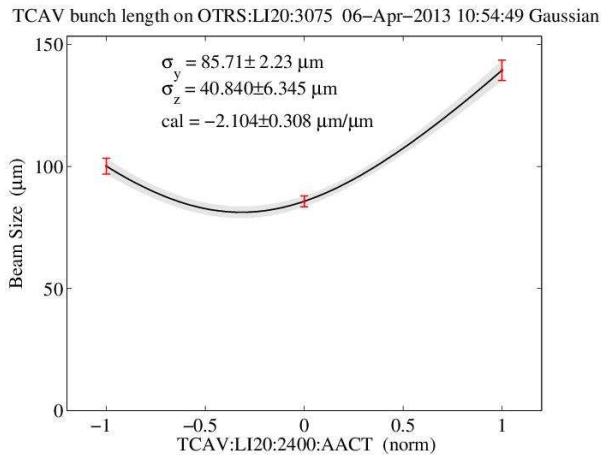


FACET Summary Apr 6 - 12

- Sat 6th
 - Successful delivery to E201 through the tube structure. Beam size was low 30s in x and low 40s in y. Bunch length was about 35 μm (started at perhaps 33 μm and finished at about 38 μm over several hours). Started work on trying to decrease the vertical beam size to below 30 μm in order to look at the E201 slab structure which has a 240 μm vertical size. Decided to spend the rest of Sat day to get better spot sizes and try to deliver to E201 Sat evening. Work continued on making an improved procedure to measure the bunch length.



- Continued improving the spot size. Found a factor of 2 correction for the spot size using downstream OTR when compared to WS2. So previous spot size estimates were large. Deliver a beam with spot size of 28x27 μm to E201.
- Data collected with slab structure and round beam. Loaded in a magnet config. and adjusted settings to make a flat beam at E201 with a small y size. Delivered to E201. Data collected but klystron 9-1 tripped off and NDR vacuum fault which shortened running time.
- Sun 7th
 - IP restored to waist at WS1 for E202 experiment. Beam spot is about 40x40 μm and length is about 35 μm . Delivered to E202. Then waist move to E201 again for E203 experiment (Smith-Purcell). Delivered to E203. Spot size requirements very loose (<100 μm). E206 (THz) taking parasitic data.

FACET Summary Apr 6 - 12 (pg 2)

- Mon 8th
 - E203 continued taking data. Found a signal using 50 um grating. Worked on getting a more reliable bunch compression by re-peaking up the NRTL compressor and turning on a slow feedback maintain optimization. Bunch length about 31-33 um. Started study of spectrometer quads (QS1 and QS2) and found that they steer the beam when we are on the present gold orbit in the final focus quads. Quantified the offsets of these two quads. Y offset was very small or zero. X offsets calculated to be on the order of 1mm. This hampered final setup of the CHER spectrometer although a good deal of preliminary work was accomplished.
- Tue 9th
 - Moved the waist to as close to the THz table as possible. E206 wanted beam sizes <100 um. Achieved about 120 x 50 um. E206 successfully collected a lot of data.
 - Standard machine measurements and configuration saves. Overall machine emittance fairly stable. Start phasing klystrons. POMM (Planned Operational Machine Maintenance) (9am-12pm). Setup for another E203 run. E203 took 4 hrs of data (16:00-20:00). Right after E203 was done:
 - Sitewide power dip knocked off all programs. Explosion heard in main control (MCC) and damage found in 12kV switchgear at the end of the gallery building in sector 30. Electricians called in to work on equipment. Many water pumps tripped off as well as other things. Most back up after calling extra people in.
- Wed 10th
 - Continue recovering from the power dip. Electricians sent home so they can come back in the morning. Prepare for PAMM. Electricians back in the morning and repair damage by 3pm. Damage caused by rodent. In spite of unexpected workload increase from power dip, most PAMM activities completed and all programs back on after PAMM recovery. Linac magnets in LI11 and LI12 aligned during PAMM. Beam recovered late swing.

FACET Summary Apr 6 - 12 (pg 3)

- Thu 11th
 - Continue PAMM and power dip recovery. Beam back down to the positron scavenger line and down to the FACET dump. Initial emittances in the Linac much better between Li11 and Li18 after the quad realignment. Continue tuning up machine and characterizing. Linac emittance already much improved by quad realignment during PAMM. Prepare for tour. DOE and Japanese visitors tour FACET in the afternoon. Recovery by early swing. Try lower beta* lattice to see how small a spot size can be achieved. Got about 25x25 um with minimal optimization.
- Fri 12th
 - Phased the Linac klystrons. No major misphasing found but corrections still on the order of 5-10 deg. Improved the orbit through the scavenger line to the positron target. Increased jitter found in several components. K02 front end klystron, NRTL compressor, and XTCAV signal. Some improvement on NRTL compressor during day but still not very good. K02 got some better on its own. XTCAV jitter not understood. Prepare for going to high charge over the weekend.