

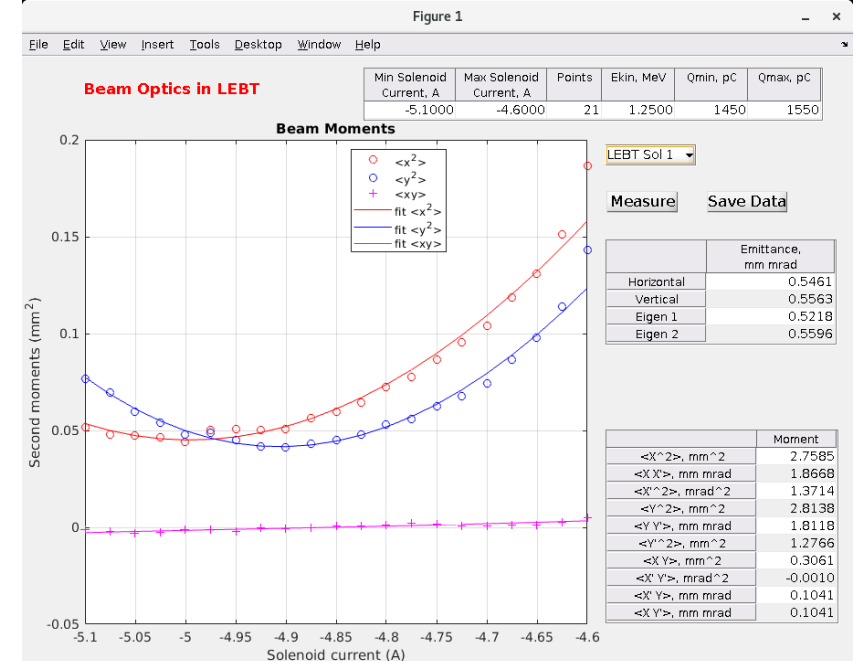
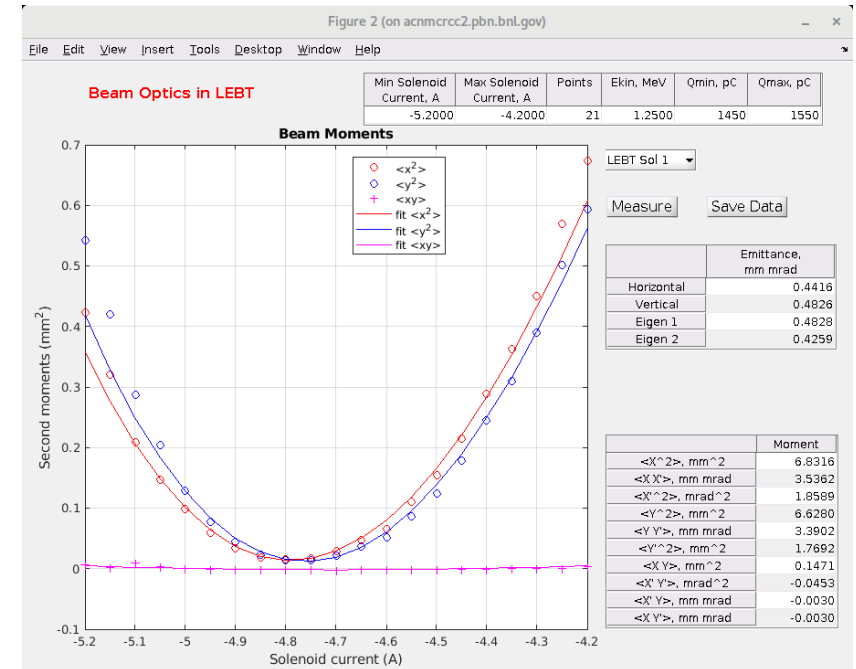
CeC status, 10/1/24

Beam quality optimization @ injector

- Optimization of proj. emittance
 - Laser iris
 - Laser spot on cathode
 - Solenoid strengths

Proj. emittance $< 0.5 \text{ } \mu\text{m}$ for 1.5 nC, approaching thermal emit.

With bunching cavity (@ 185 kV), emit $\sim 0.6 \text{ } \mu\text{m}$ for 1.5 nC.



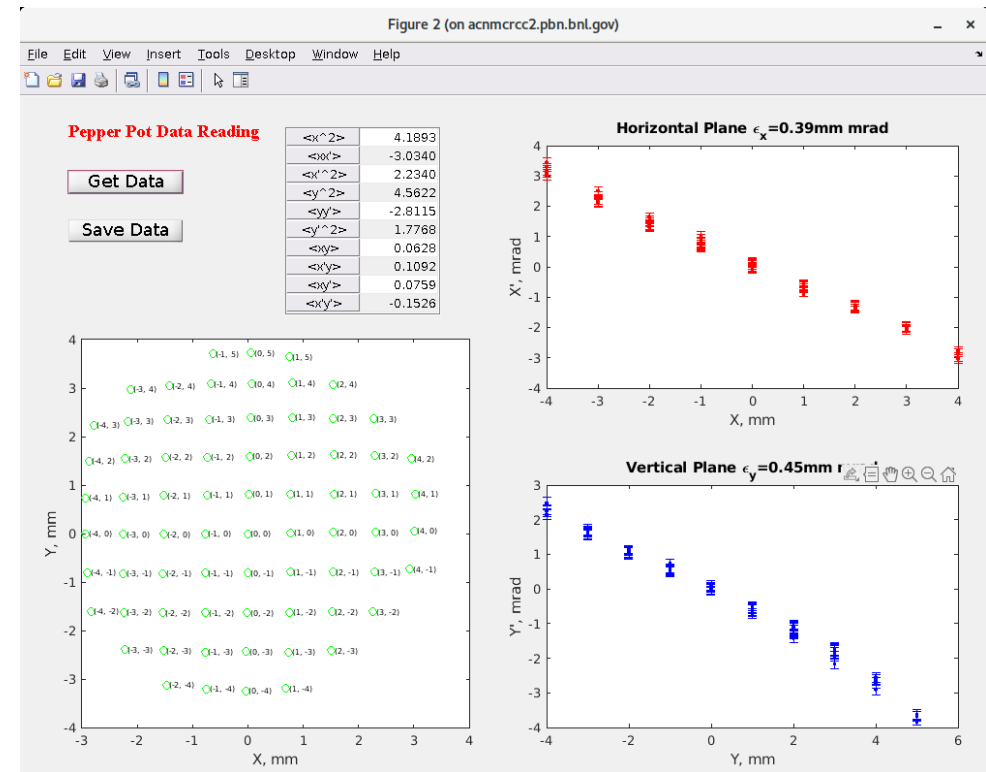
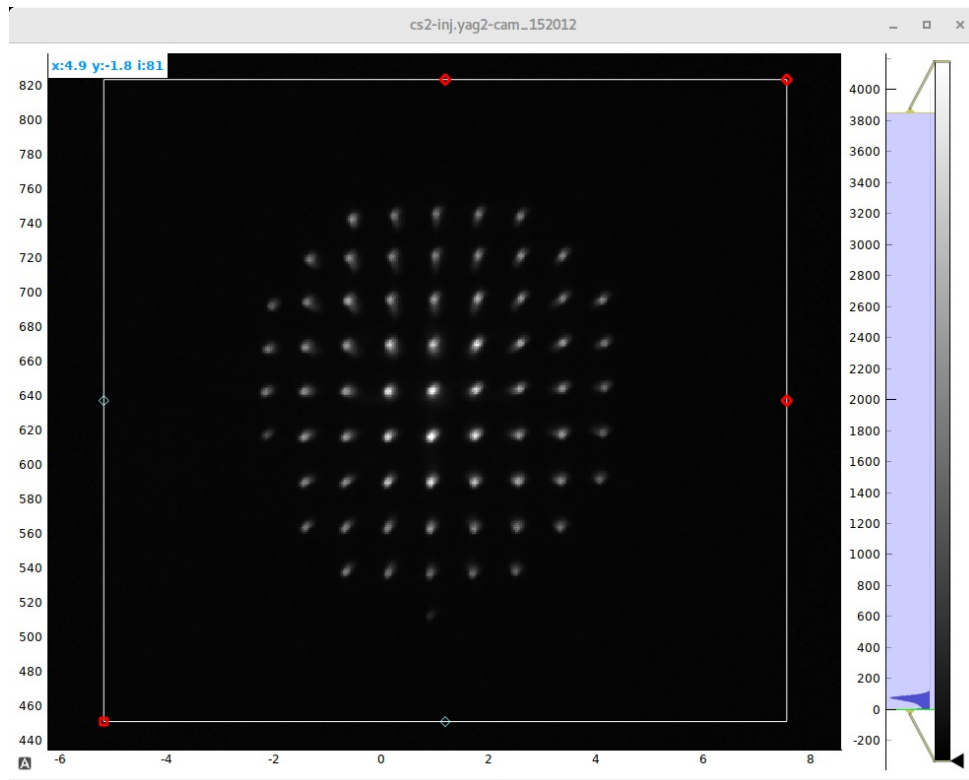
buncher

w/o

with

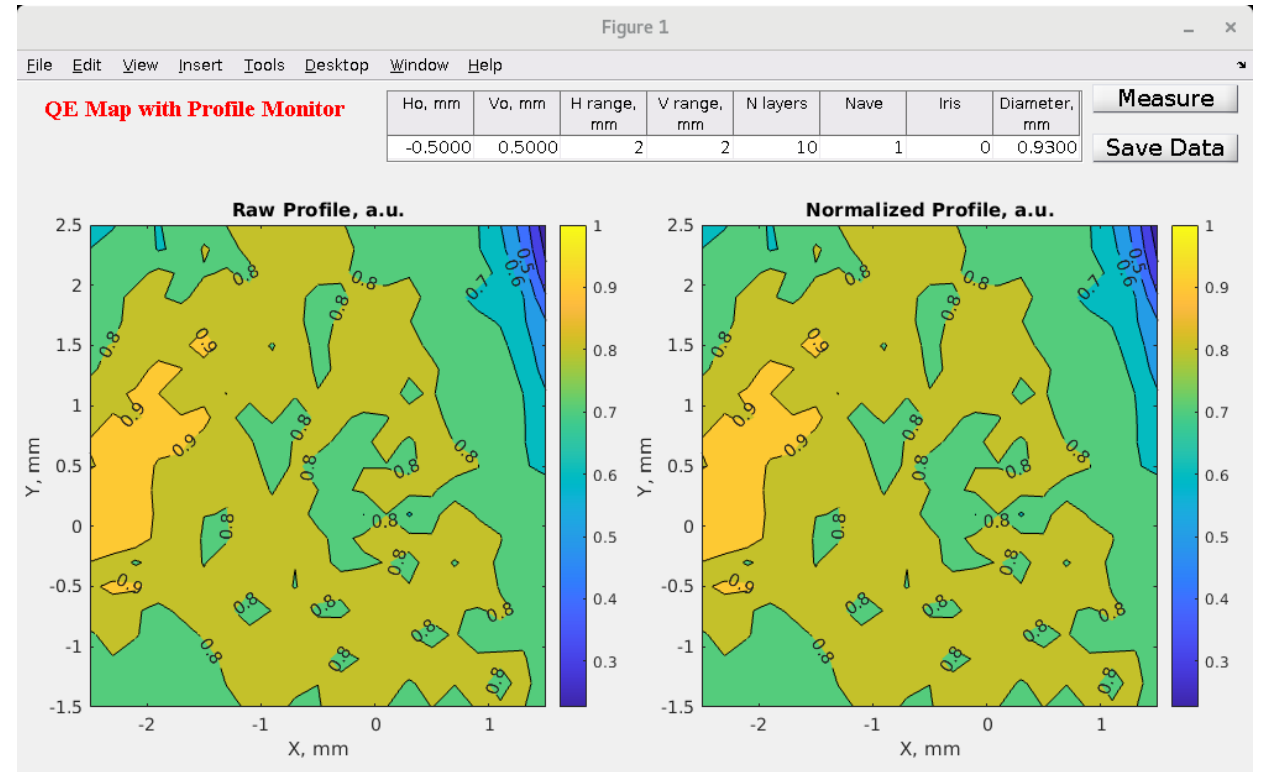
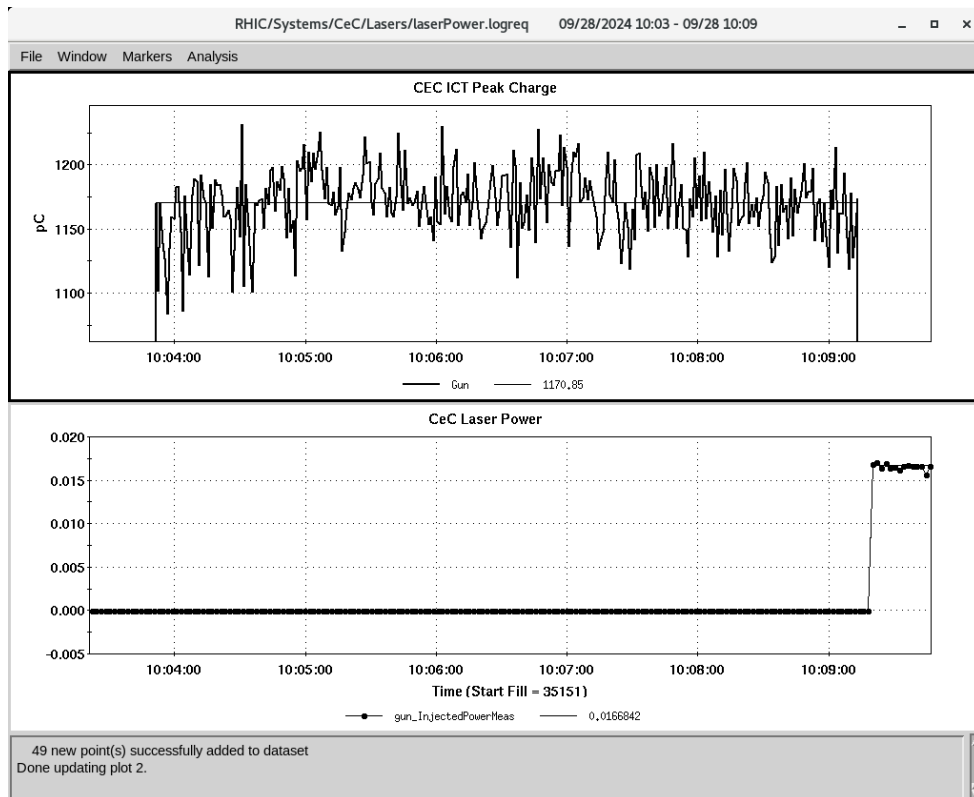
Beam quality optimization (cont'd)

Downstream pepper pot benchmarked our findings with solenoid scan



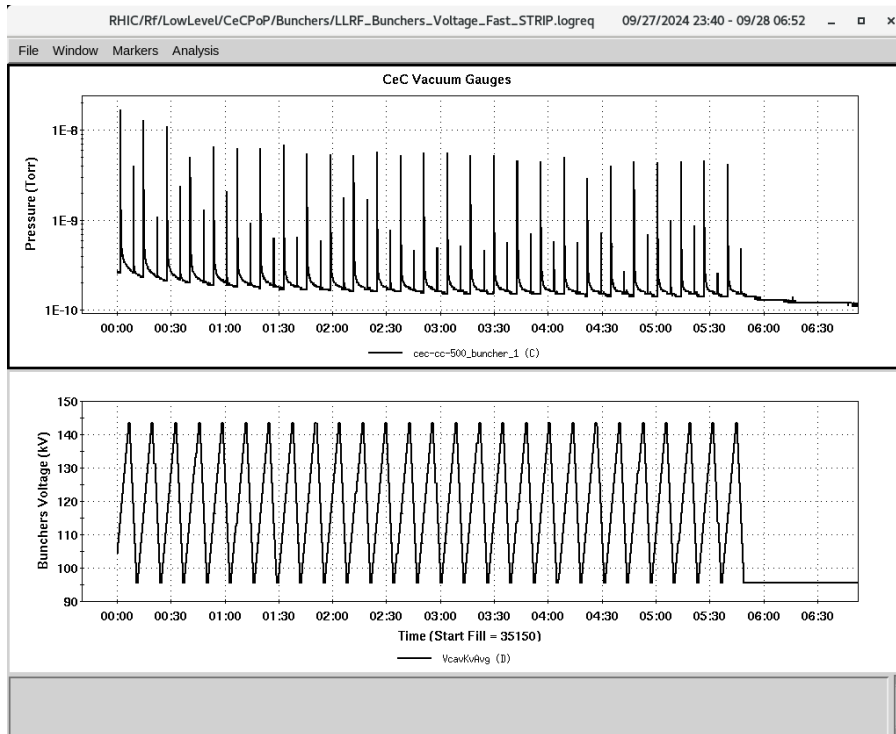
QE (map) evolution

QE continues to operate @ $\sim 1.3\%$ level over the week, no sign of degradation.
The map measured shows worse uniformity $\sim \pm 10\%$

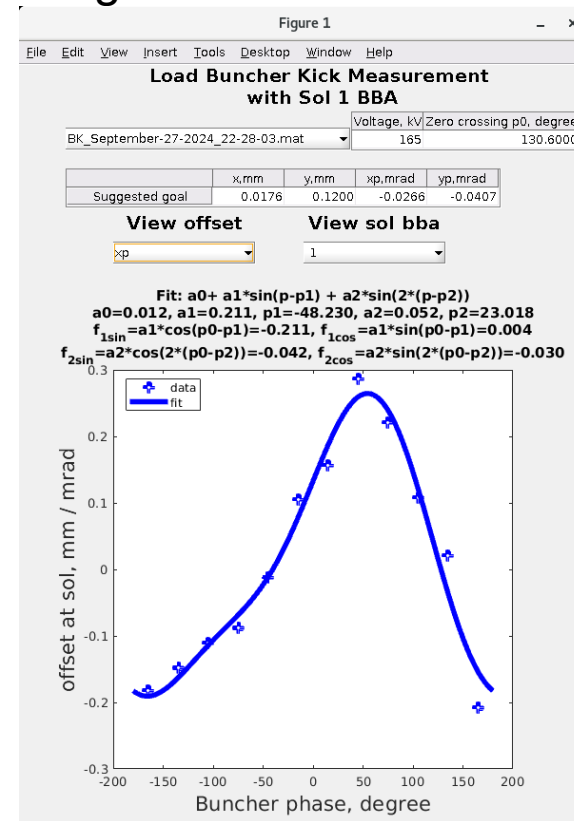


Optimizing 500 MHz cavity

Continue to scan new bunching cavity overnight to clear potential MP vacuum outbursts



Develop upstream corrector set up to minimize beam steering from the 500 MHz cavity



Best alignment achieved:
~ 100 um in pos, 40 urad in angle

Diagnostics are operational

- Beam was transported with minimal losses to the high-power dump
- All diagnostics (BPMs, YAGs, ICT) in common section and dump are functional
- High-power dump Faraday up signal is visible on oscilloscope

