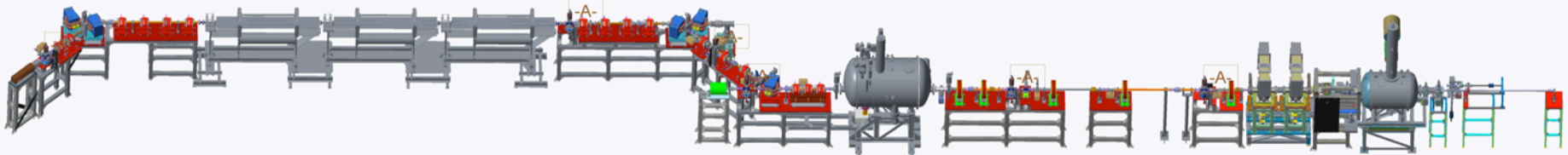


CeC plans for Run 18

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Current status

- Our SRF gun continues performing very well and photo-cathodes surviving for months
- We lost 1.5 months waiting for laser. Starting in March we operating the CeC accelerator with Nuphoton laser, which had very large random internal pulse structures and large pulse to pulse variation
- Recent improvement of the laser (done By Patrick Inacker) provide good pulse to pulse stability and relatively flat top-hat pulses. The remaining problem is 120 psec peak-to-peak laser pulse time jitter – LLRF group is trying to address it.
- We established reliable low energy beam transport using our novel solenoid-based beam-base-alignment – equivalent to 10 BPMs. CeC team developed a lot of advanced controls to implement orbit and beam dynamics
- CeC accelerator is operational and delivers beams with sufficient charge per bunch and energy corresponding to needed for our experiment $\gamma=28.5$
- We have good set-ups to compress the beam – the only remaining challenge is to reduce peak-to-peak laser pulse time jitter below +/- 10 psec
- The 120 psec peak-to-peak laser pulse time jitter is the main obstacle in attaining stable repeatable pulses and to finalize the optics
- We propagated the beam through the common (CeC) section to the beam dump with good transmission
- We observed spontaneous radiation from CeC helical wigglers, but not yet any FEL amplification
- RHIC ramp with Au ions at $\gamma=28.5$ had been developed and tested

Plans

- First dedicated shift – April 19
 - the main goal is to shake-up the systems and to test synchronization and time with circulating ion beam
- Plans for the rest of the April – compress the beam to 70-100 A peak current demonstrate FEL amplification
 - 2 days of dedicated time to evaluate the FEL gain and to establish CW lasing
- First half of May – establish interaction between electron and ion beams
 - 2-3 days of dedicated time to align beam relativistic factors and to fix the energy of CeC accelerator
- Second half of May – establish interaction between electron and ion beams
 - 2-3 days of dedicated time to observe amplification of the signal imprinted by hadrons and potentially first signal of CeC process
- June 1-9 – optimizing the CeC accelerator parameters
 - Likely 2-3 8-hour shifts of dedicated time to evaluate CeC process
- June 11-17 – dedicated CeC run
 - CeC experiments

Points for discussion

- We have very limited team (5 shift leaders) and it would be beneficial to alternate CeC shift with STAR stores in June
- 24/7 shifts are both exhausting and some time contra-productive: the team needs time to meet and to discuss the results and challenges
- At some critical moments it would be beneficial to have more than one expert in the team
- The alternation between CeC and STAR shifts can be done on day/by/day, shift/by-shift or any other acceptable method