

# Status of KLF Project

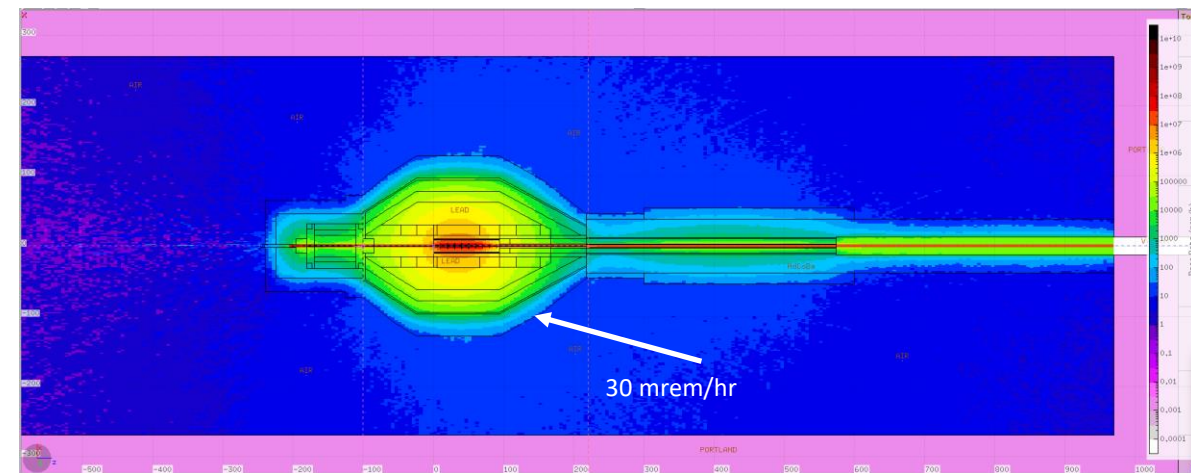
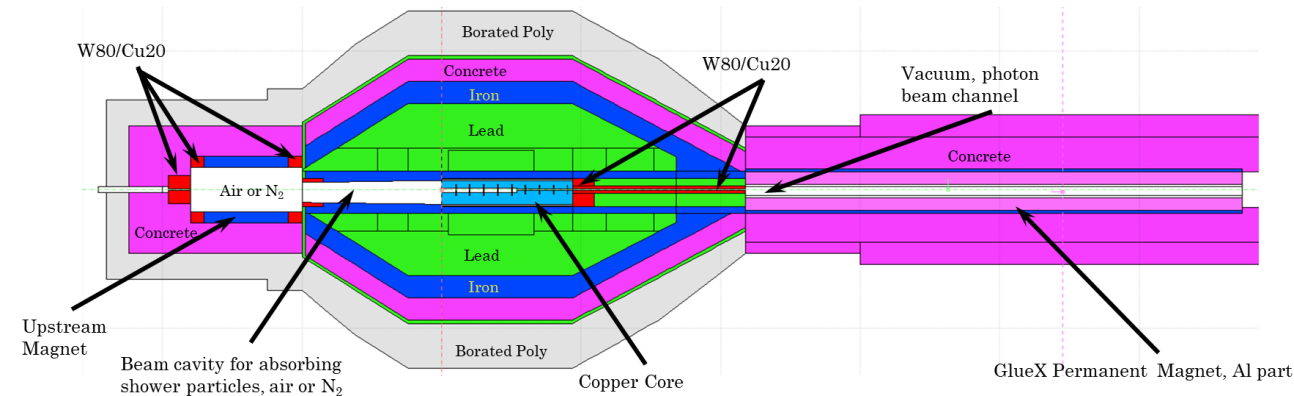
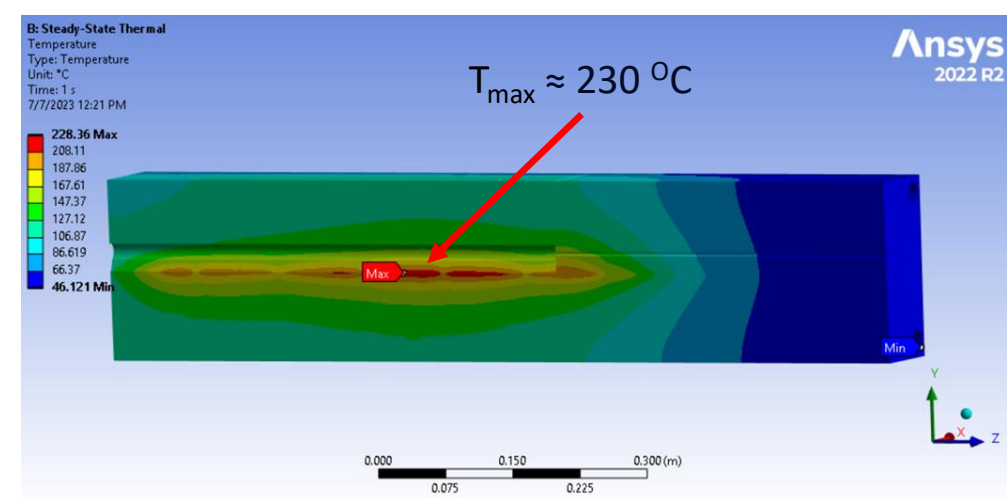
Hovanes Egiyan

# New Equipment for KLF

- Compact Photon Source (CPS)
  - Jefferson Lab & ODU
- Kaon Production Target (KPT)
  - GWU, ODU & Jefferson Lab
- Kaon Flux Monitor (KFM)
  - University of York
- Cryo-target
  - Jefferson Lab
- Electron Beam Instrumentation
  - Jefferson Lab & ODU

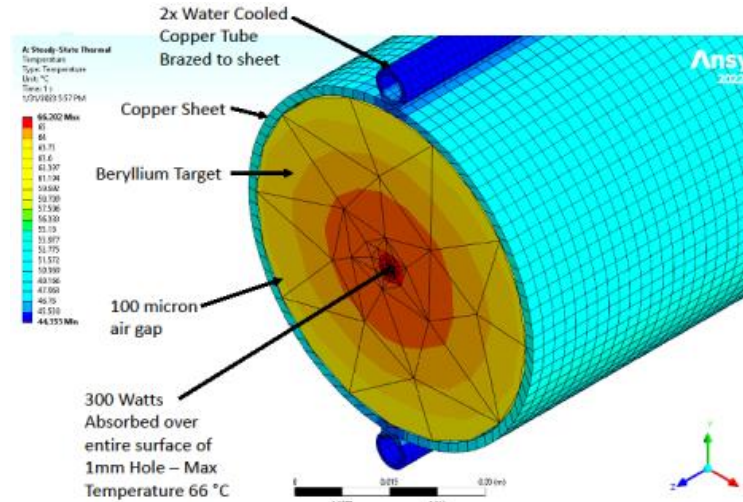
# Compact Photon Source

- Conceptual design exists.
  - Working on optimization.
- Temperature in the copper core is significantly lower than in Hall C design,  $T_{\max} = 230\text{ }^{\circ}\text{C}$ .
- Sufficient shielding to satisfy RadCon and Hall D requirements.
- CPS will be moveable to restore GlueX photon beamline.
- Engineering design will start after this review.
  - Engineering design and procurement are expected to take  $\sim 21$  months after ERR-1 approval.
- Current cost estimate for CPS is  $\sim \$1\text{M}$ .
- Expected installation duration is  $\sim 6.5$  months.
- Details in talks by H.E. and Tim Whitlatch.

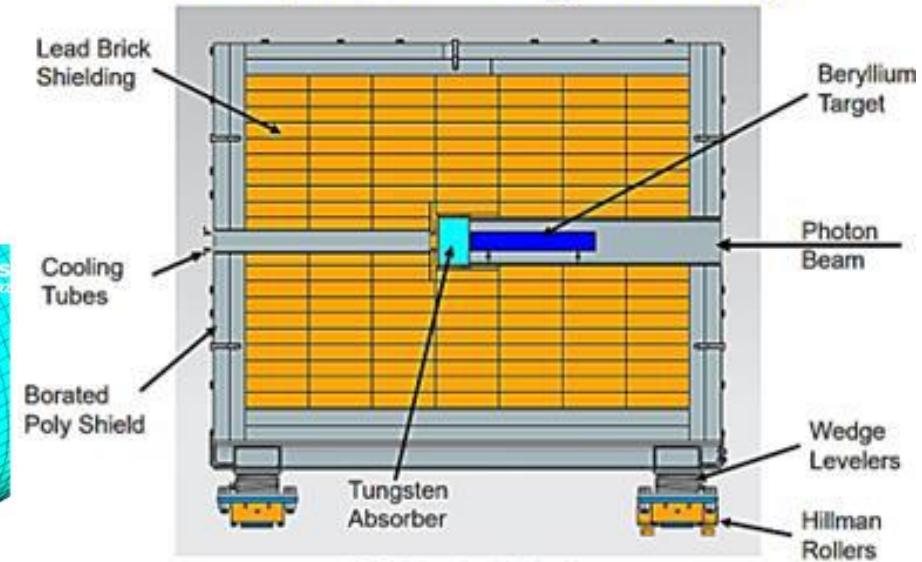


# Kaon Production Target

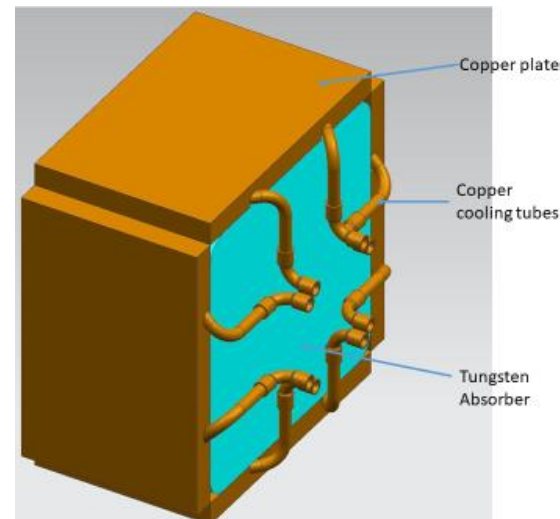
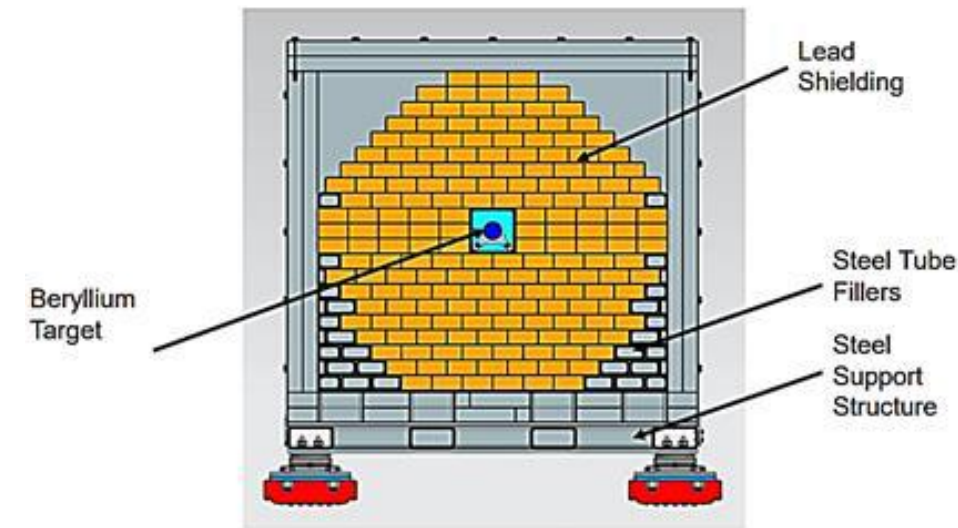
- Conceptual design complete.
- Radiation environment in the collimator cave and the main hall are evaluated.
  - No significant impact on the equipment lifetime in Hall D is expected.
  - Meets requirements of RadCon.
  - Special care will need to be taken before accessing Collimator Cave, based on the activation rates.
- Engineering design is also complete.
  - Including cooling system for the target and tungsten plug.
- Preparing for procurement of KPT components.
  - Total estimated cost is ~\$210K.
  - Procurements are expected to take ~9 months after ERR-1 approval.
  - Installation length is ~4.3 moths.
- Details in presentations by Igor Strakovsky and Tim Whitlatch.



## Beryllium Target Assy

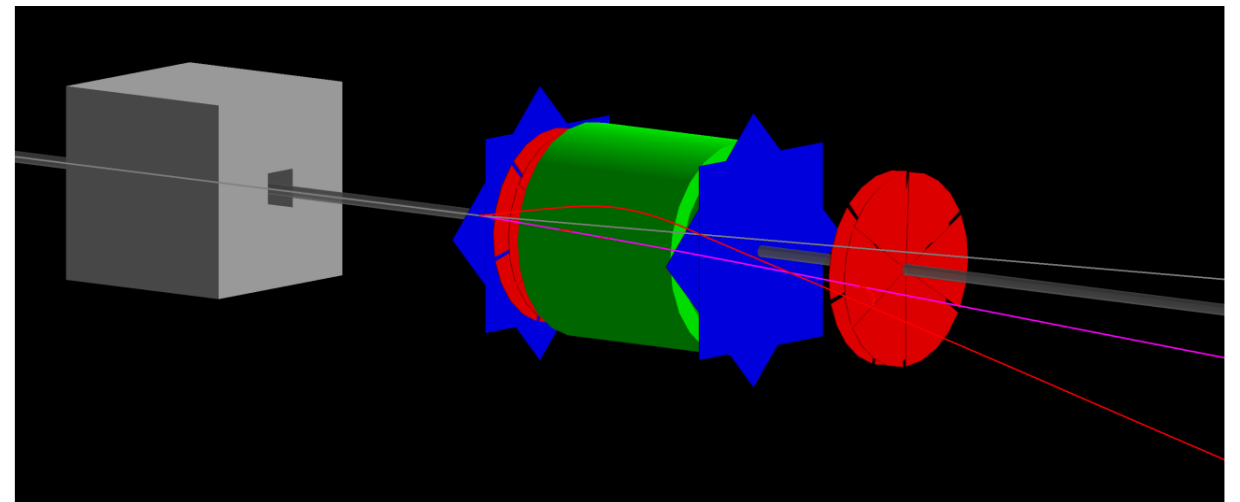
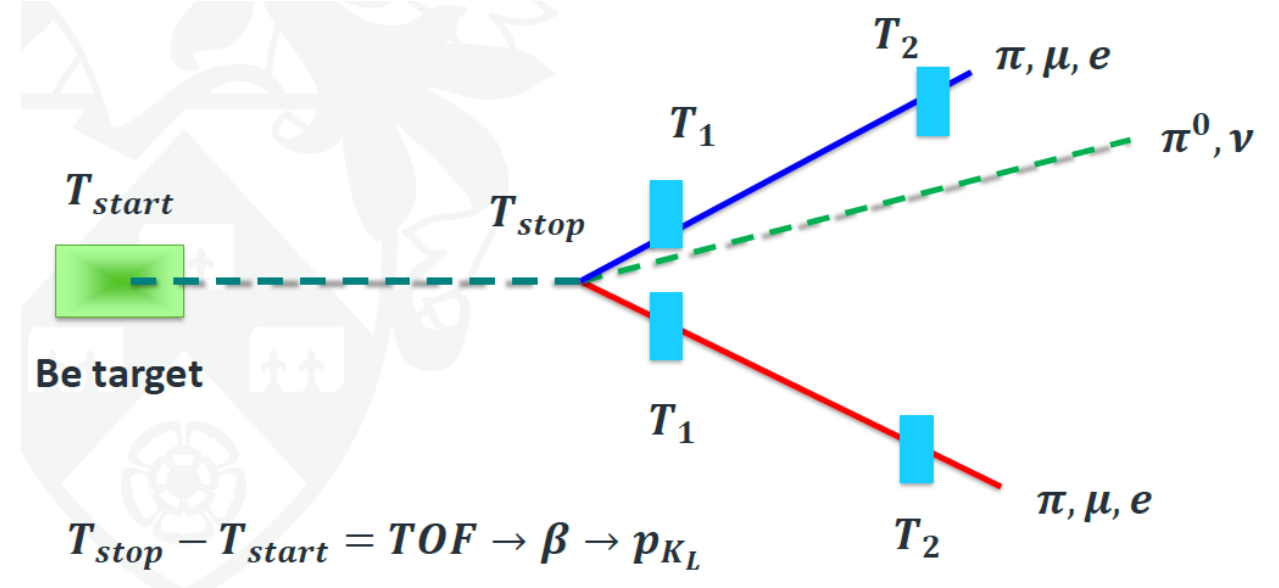


## Beryllium Target Section



# Kaon Flux Monitor

- All components will be designed, procured, and constructed by University of York, UK.
  - Waiting for funding approval from UK funding agencies.
  - Decision should be known by the end of the summer.
- Four possible scenarios are being considered based on the funding approval.
  - A. Completely new detectors, plus an MRI magnet.
  - B. WASA FPC tracking and TOF detectors reused.
  - C. No magnet, with WASA FPC and TOF.
  - D. No magnet, no FPC-s, scintillator hodoscopes only.
- In either case, KLF will have a kaon flux monitor.
- Performance of the flux monitor depends on which scenario is implemented.
- The scope of the installations in the hall depends on the selected option.
  - Procurement, delivery, and installations of the MRI magnet and its controls will be closely coordinated with Hall D engineering group.
- More details in Mikhail's presentation.

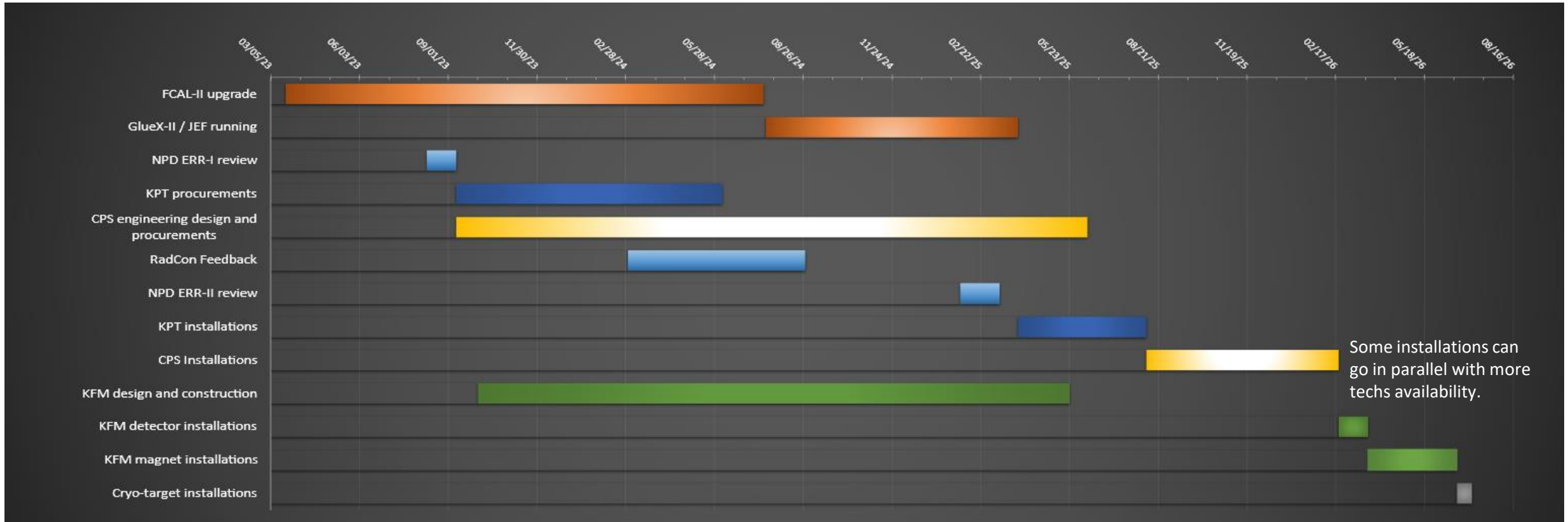


# Electron Beam

- Electron beam requirements for CPS operations are defined and conveyed to CASA and OPS.
  - No showstoppers are identified.
  - May need some new equipment in the tagger hall and the main hall.
  - See the talk by Edith Nissen.
- Beam bunching of 64ns and 128ns are being studied.
  - A special laser to support high charge density has been purchased.
- There are concerns about compatibility of KLF with MOLLER.
  - Compatibility with MOLLER is currently under investigation.
  - Beam tests will be done this fall to answer related questions.
- More details regarding beam time structure are in presentations by Geoffrey Krafft and Riad Suleiman.

# Timeline

- The timeline is based on current design and preliminary estimates.
- Total cost estimate to Hall D ~\$2.3M.
  - KLF is covered by University of York.
- We need to start engineering design of CPS this fall.
- Need to start procurements of KPT this fall.



# Summary

- Conceptual design for CPS exists.
  - Needs some optimization studies to save weight and cost, as well as some space.
- Engineering design for KPT exists.
  - Ready for procurements.
- Option for the KLF design will be finalized this summer.
  - Waiting of funding decision in UK.
- Compatibility with MOLLER experiment needs beam tests.
- No major R&D is required for any of the KLF components.
- Current timeline will allow us to be ready to start running in July of 2026.