

# 2 3 2016 Meeting Minutes

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This meeting was called to discuss design of the beamline components for commissioning the DC gun. It covered a lot of ground beyond this. Please look at the minutes – add, correct, modify.

In order to commission the DC Gun, the first section of the LEReC transport beam line needs to be installed during the 2016 shutdown (without the SCRF booster cavity installed). A temporary beamtube will be installed in place of the Booster Cavity.

1. Another goal of the 2016 shutdown is to install the 2.1 GHz cavity and commission it (without beam) during the 2017 RHIC run. The beam line location puts it in the DC gun transport line. Will the cavity have an adverse effect on the 400kV (or less) e beam for the DC Gun?
2. The latest accurate model for the for the Gun to Faraday cup beam line was done in September 2015 by Karem. Need to verify that it is still correct.

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3. Transport line BPM's. Some issues:

- There are not enough ERL BPM buttons for the entire transport line and the vendor source for those buttons is no longer available.
- The ERL BPM buttons may not be optimized for the beam parameters generated by the DC gun during commissioning.
- The open question is whether a new design for the BPM is needed for the three BPM's needed for this beam line. (action J. Kewisch)

4. Present plan is for the first 2 solenoids in the beam line downstream of the Booster cavity it to use ERL solenoids. Karem will lay them into the beam line drawing.

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5. The present vacuum beam tube is 2.5" OD x 2.375" (60mm) ID stainless steel tube. There was discussion on using ERL size again; but, it was agreed that the larger aperture was welcome.
6. The ICT and DCCT will be taken from the ERL beam line. The aperture of these devices need to be verified to determine if they are compatible with LEReC. If not compatible then beam tube aperture transitions are required, it might be best to put the ICT and DCCT close to each so there is only one set of transitions.
7. There are 2 profile monitors in the beam line (one in the main line and one in the diagnostic stub line). Hardware will be used from ERL; but, the chamber aperture is different. Gary W. has done a layout of the new chamber design for Peter T. analysis. Toby needs to determine if both profile monitors can be the same design.
8. The emittance slit will use the drive system from ERL. Toby noted that the slit pattern may have to be different. The vacuum chamber will have to match the LEReC aperture and will have to be analyzed by Peter T.

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9. The Halo Monitors will use the drive systems from ERL. Similar comments with other components. The vacuum chamber (basically a 4 way cross) will have to match the LEReC aperture and will have to be analyzed by Peter T.

10. Some discussion on BPM electronics.

- Cables have been pulled for testing 2 or 3 BPM's in the cooling section (thought there was some debate over where they were pulled to). The prototype electronics will be tested this year.
- Rob wants to do more testing on the prototypes before buying the production units.

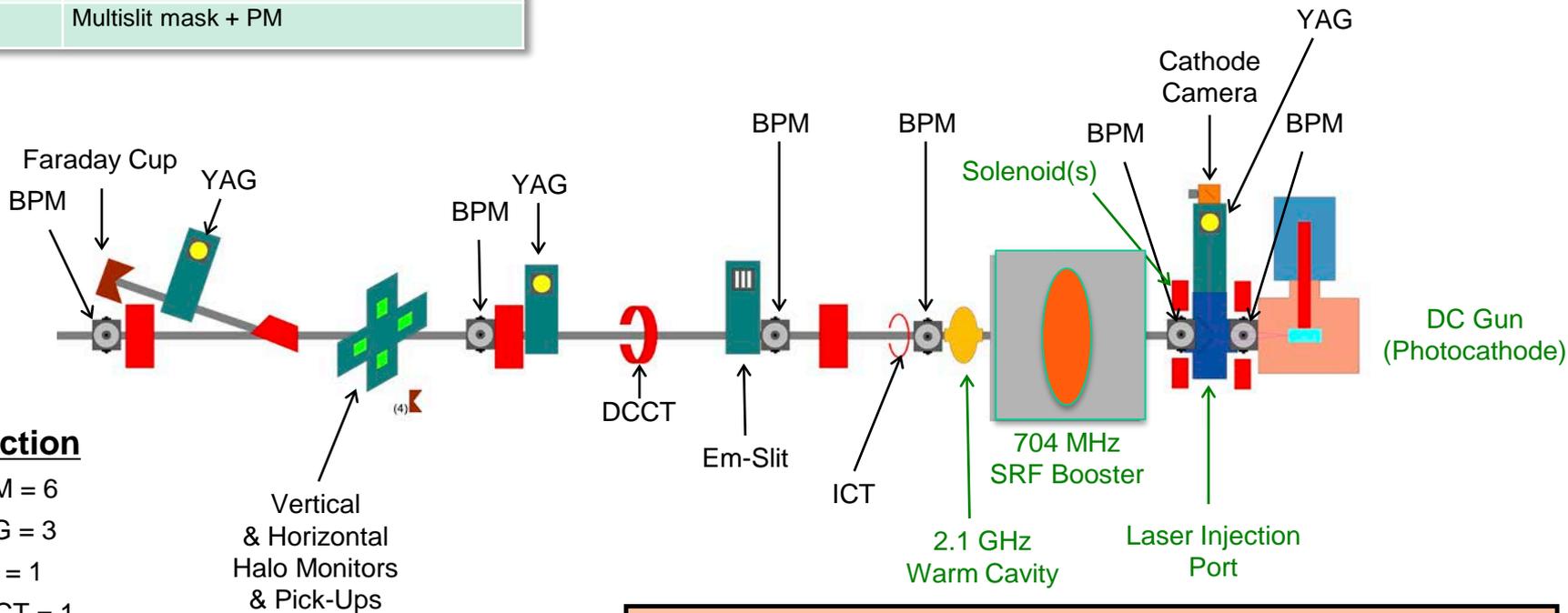
11. Dave will have BPM cables in hand for installation of the cooling section and DC gun transport test at the beginning of the shutdown. The new penetrations are installed; but, cable tray still needs to be designed and installed

# Diagnostics: Gun to Booster Cavity

Parameter	Instrument
Position	BPM System
Current / Charge	ICT, DCCT, Faraday Cup
Profile	Profile Monitors (PM)
Halo	Moveable Halo Detectors
Emittance	Multislit mask + PM

Equipment specifications:

- Solenoids, Dipole, BPM's
- Beam diagnostics hardware and electronics
- Beam line vacuum



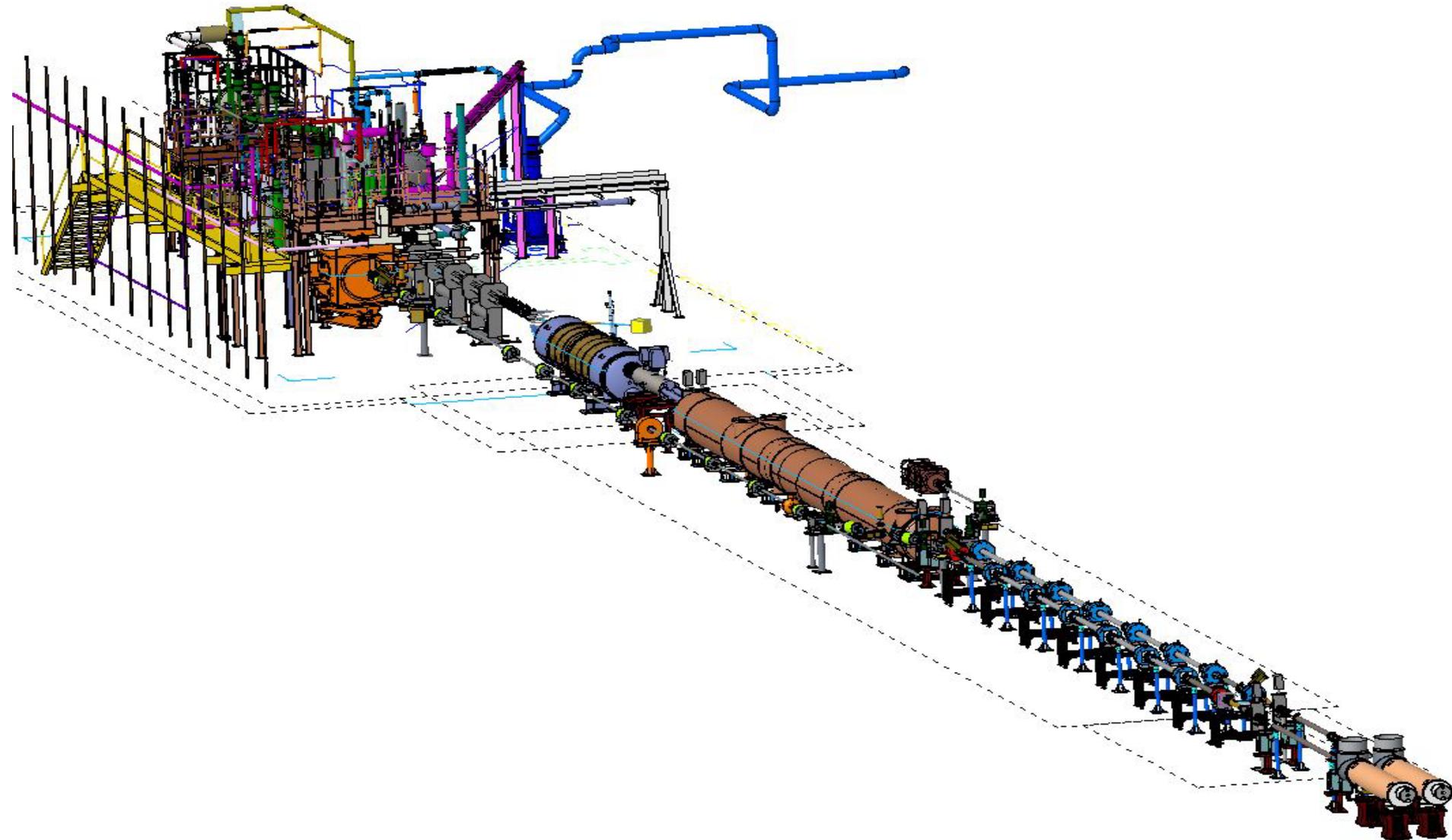
Cornell Layout GtB,

**Bake-out to 200C near DC Gun**

DC Gun instrumentation:

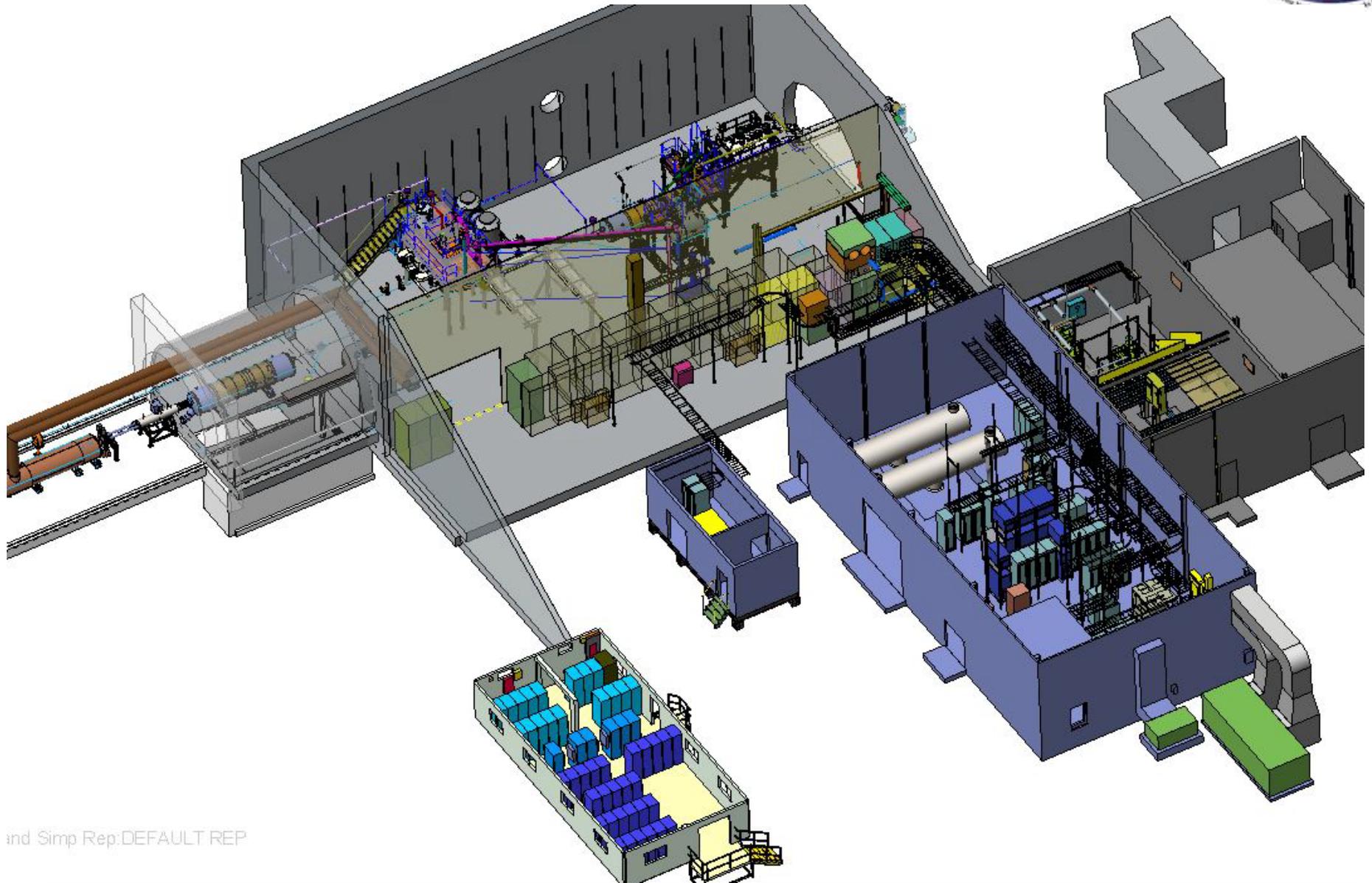
- **Large Button or ERL Buttons or Striplines??**
- Profile Monitor in Laser Cross
- Cathode Camera in Laser Cross

# LEReC



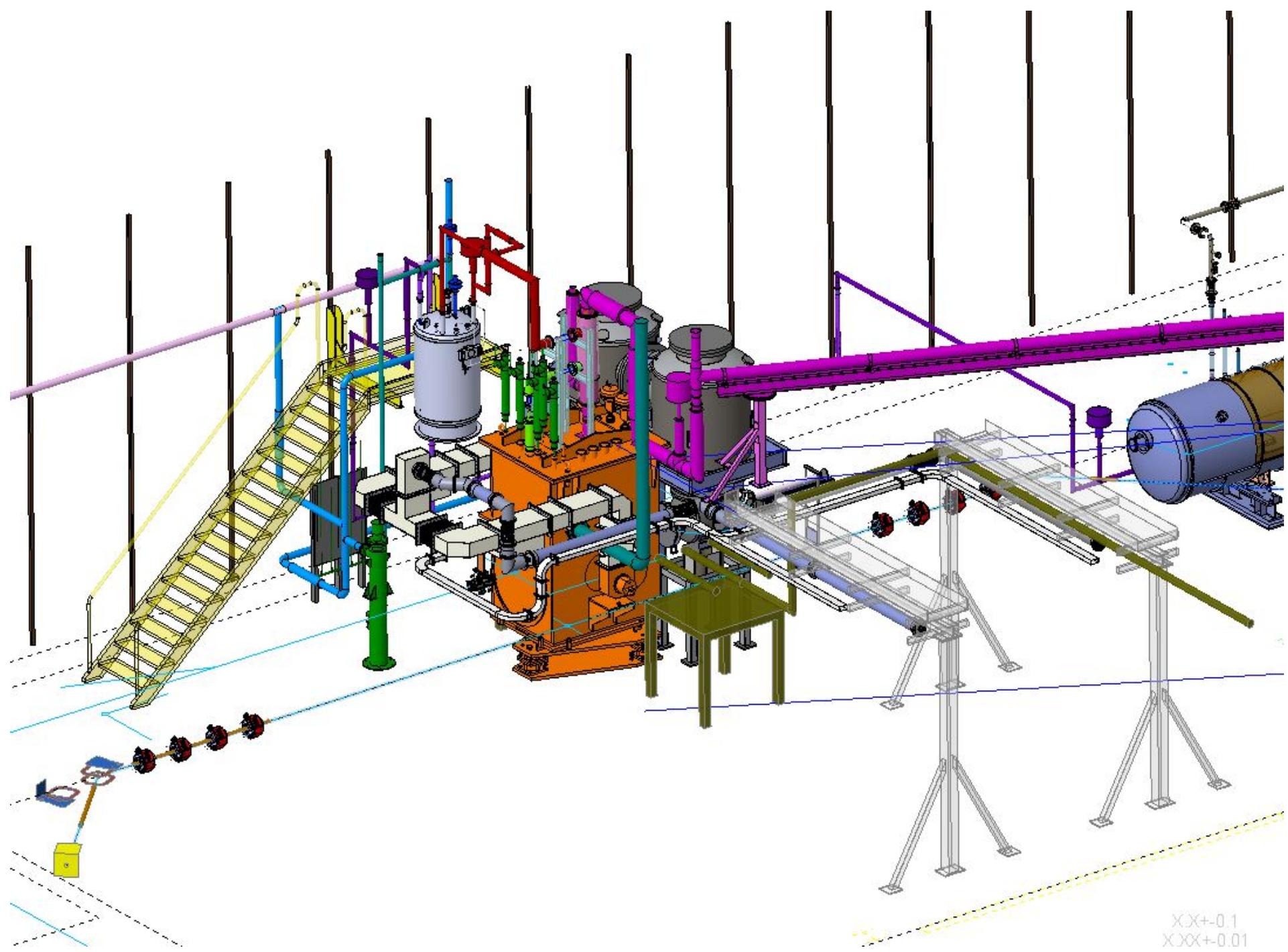
Low Energy RHIC electron Cooling

# LEReC



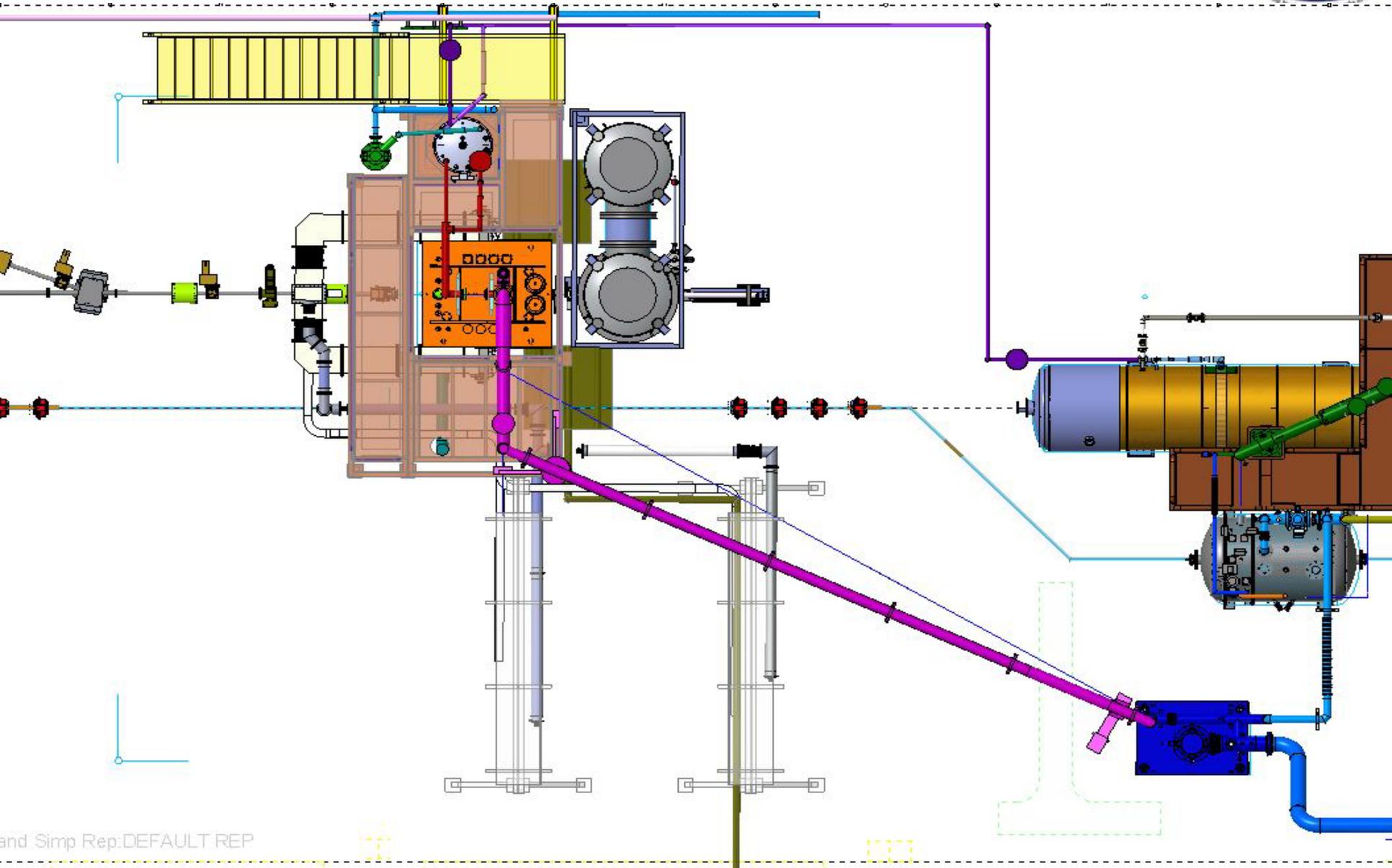
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## Low Energy RHIC electron Cooling



XX+0.1  
XXX+0.01

# Booster Cavity Installation



Low Energy RHIC electron Cooling