



PIP-II

Project Director Report

August 2021



Project Highlights

- DOE CD-3 IPR is scheduled March 1-3, 2022, and Director's Review is Nov 30–Dec. 2, 2021.
- RRCAT cavity is first $\beta=0.92$ to qualify for HB650 string assembly. A total of 4/6 cavities are qualified.
- The first title transfer of partner deliverable to DOE was completed with the INFN LB650 prototype cavity.
- Cryogenic Plant Building construction is ~75% complete, with metal siding installation started, repurposed helium storage tanks installed.

Upcoming Events

Sept. 1-3	All PIP-II Collaboration Accelerator Physics Meeting
Sept. 1–Dec. 1	ASPIRE Fellowship application period
Sept. 7	High Power RF Int'l Technical Discussion #2
Sept. 16	9 th Project Executive Board meeting
Nov. 30–Dec. 2	CD-3 Director's Review
March 1-3, 2022	DOE CD-3 IPR

DOE CD-3 Independent Project Review date is set

The DOE CD-3 IPR is scheduled for March 1-3, 2022, and the corresponding Director's Review on Nov. 30–Dec. 2, 2021.

A schedule for completing key technical (requirements and interface documents and design reviews) and project management (cost, schedule, risk and procurement) deliverables for CD-3 was developed.

RRCAT cavity 502 first $\beta=0.92$ to qualify for string assembly – A total of four HB650 cavities now qualified



RRCAT-502 (jacketed) cavity successfully tested in VTS, reached administrative limit of 22.7 MV/m

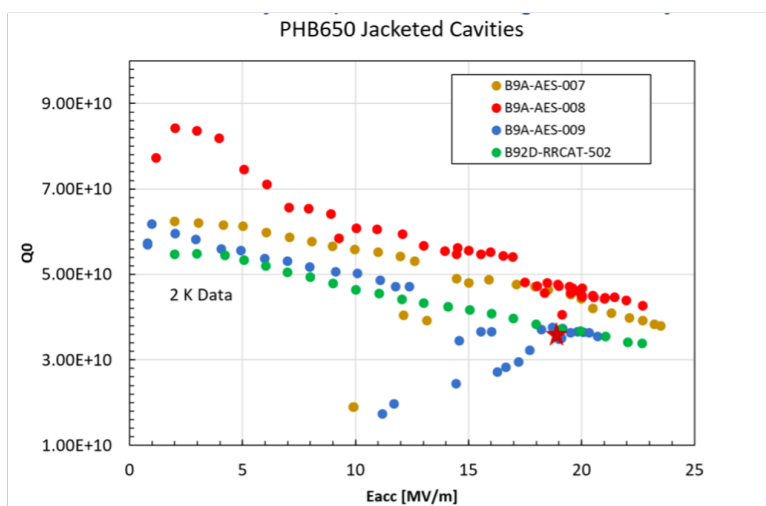
- Q_0 at 19 MV/m is 3.7×10^{10}
- Cavity is now being prepared for STC (horizontal) testing.

This is the first $\beta=0.92$ jacketed cavity that has reached these values, and first $\beta=0.92$ for the HB string.

Congratulations to our RRCAT Colleagues!

AES008 (jacketed) successfully tested in VTS, reached administrative limit of 22.7 MV/m.

A total of four HB650 cavities are now qualified for string assembly of the first ever HB650 prototype cryomodule.



Cavity performance of the four HB650 qualified cavities.

Disassembly/removal of PIP2IT and Installation of 650 MHz Test Stand

On April 16, a very successful multi-year beam test program ended at PIP2IT.

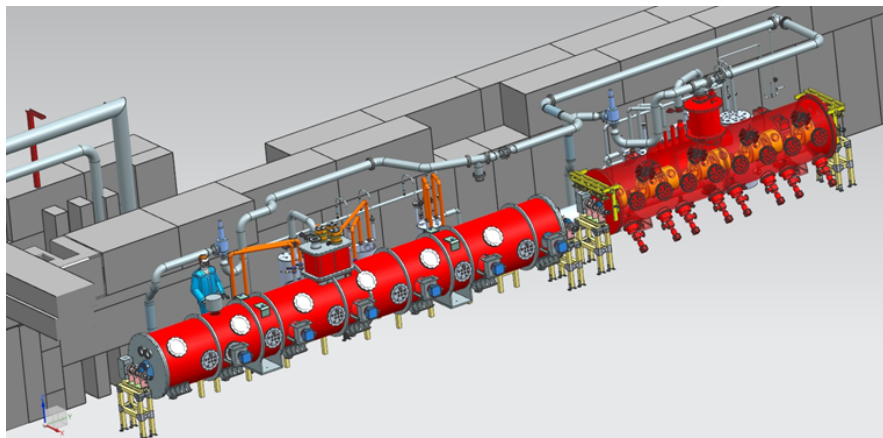
Going forward, PIP2IT will serve as the PIP-II Cryomodule Test Facility.

Disassembly/removal of PIP2IT and installation of the 650 MHz Test Stand is ongoing and will be complete in December 2021. Recent activities include:

- Cryogenic transfer line installed in PIP2IT for fit-check
- RF penetration roof blocks cored and installed on PIP2IT roof
- Electrical work to run power to mezzanine for future 650 MHz amplifiers



Disassembly of PIP2IT and installation of cryogenic transfer line for the 650 MHz Test Stand.



Drawing of the future PIP-II Cryomodule Test Facility where a 325 MHz (spoke) and a 650 MHz (elliptical) cryomodules can be RF-tested simultaneously.

Cryogenic Plant Building



Cryogenic Plant Building construction is ~75% complete. Metal siding installation started and six repurposed helium tanks moved to the PIP-II site. These tanks, whose total liquid He storage capacity is ~16,200 L, were built in 1982 and previously supported the Central Helium Liquifier for the Tevatron.

Visible progress on Cryoplant Building. Helium storage tanks and metal siding installation. Spacing of the windows is an abstraction of the spectral lines of He.