MICE Construction Update at LBNL

Derun Li for MICE LBNL Team

MAP Friday Meeting

March 6, 2015

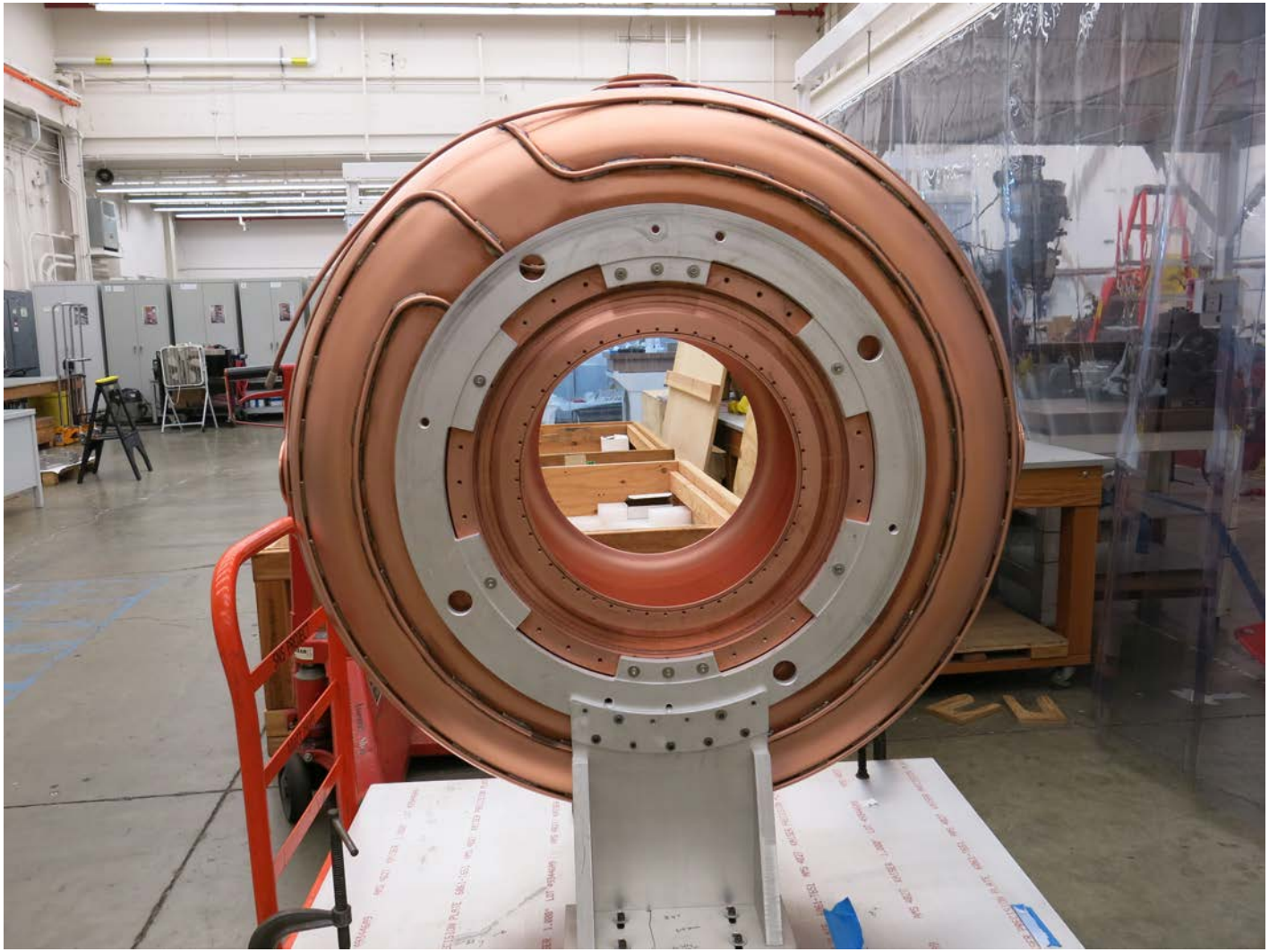
Vacuum Vessel for RF Module

- Vacuum Conceptual Design Review was held in January 27-28 at LBNL
  - Vacuum calculation note has been updated and posted to the review website: https://indico.fnal.gov/conferenceDisplay.py?confId=9304
  - Low temperature solder (for RF coupler) recommended by the review committee will be ordered for testing at LBNL
- New members to the MICE team at LBNL
  - Tim Loew (Mechanical engineer)
  - Lucas Kistulentz (designer)
- The CAD model for RF module are being updated by Allan DeMello and Andrew Lambert before handing over to Tim Loew

MICE RF Cavities

- Four RF cavities (two spares) have been chosen for MICE by
  - RF frequency measurement: close in frequencies
  - Inner surface inspection: best surface finish
- Electro-polishing of MICE cavities
  - Mechanical buffing first and then EP
  - Two cavities have been EPed, one more next week and finish all four cavities in March 2015.
- RF coupler interface design modification complete
  - A prototype made
  - Flange clamps ordered.

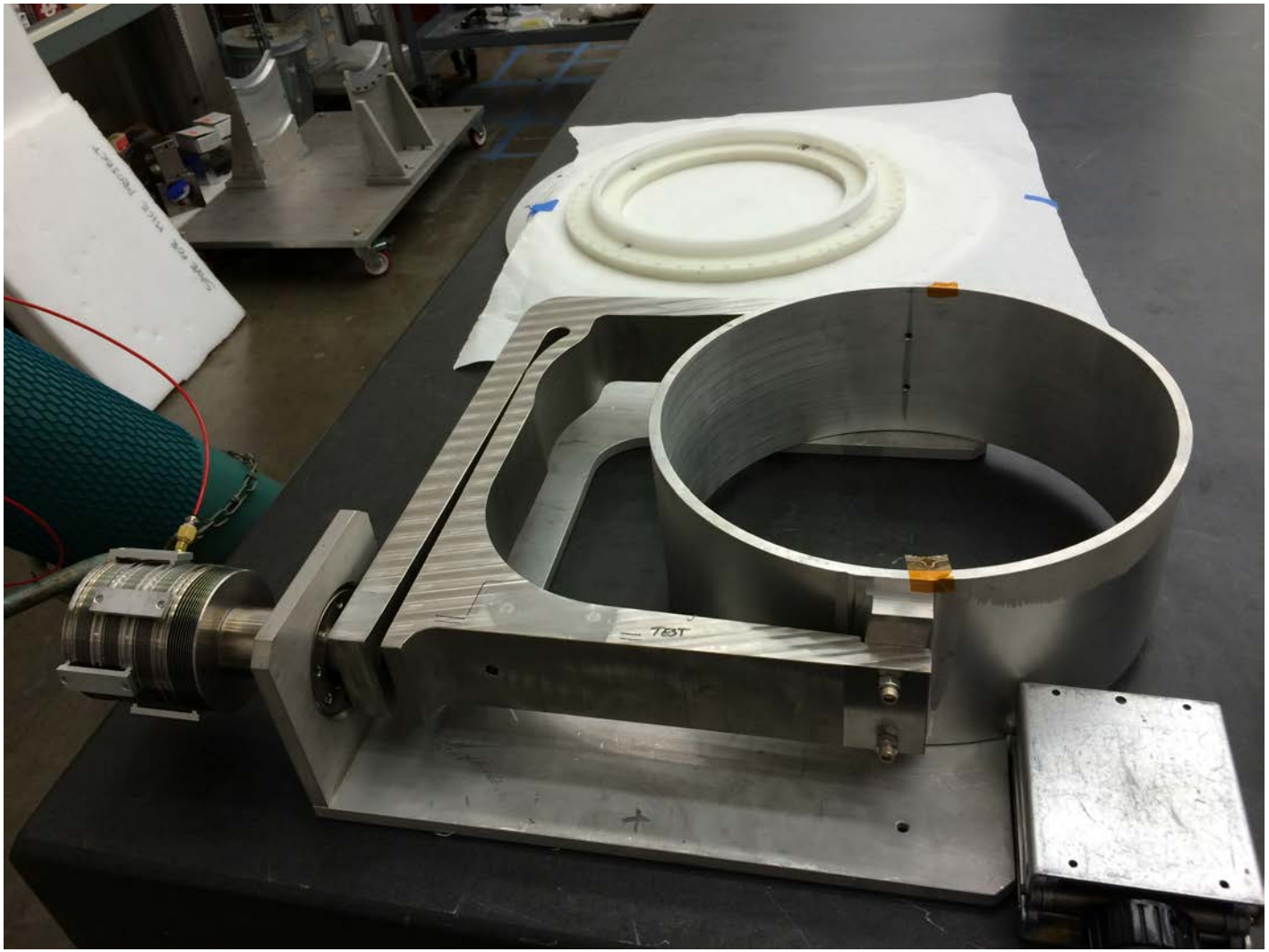
The 1st EPed MICE Cavity at LBNL



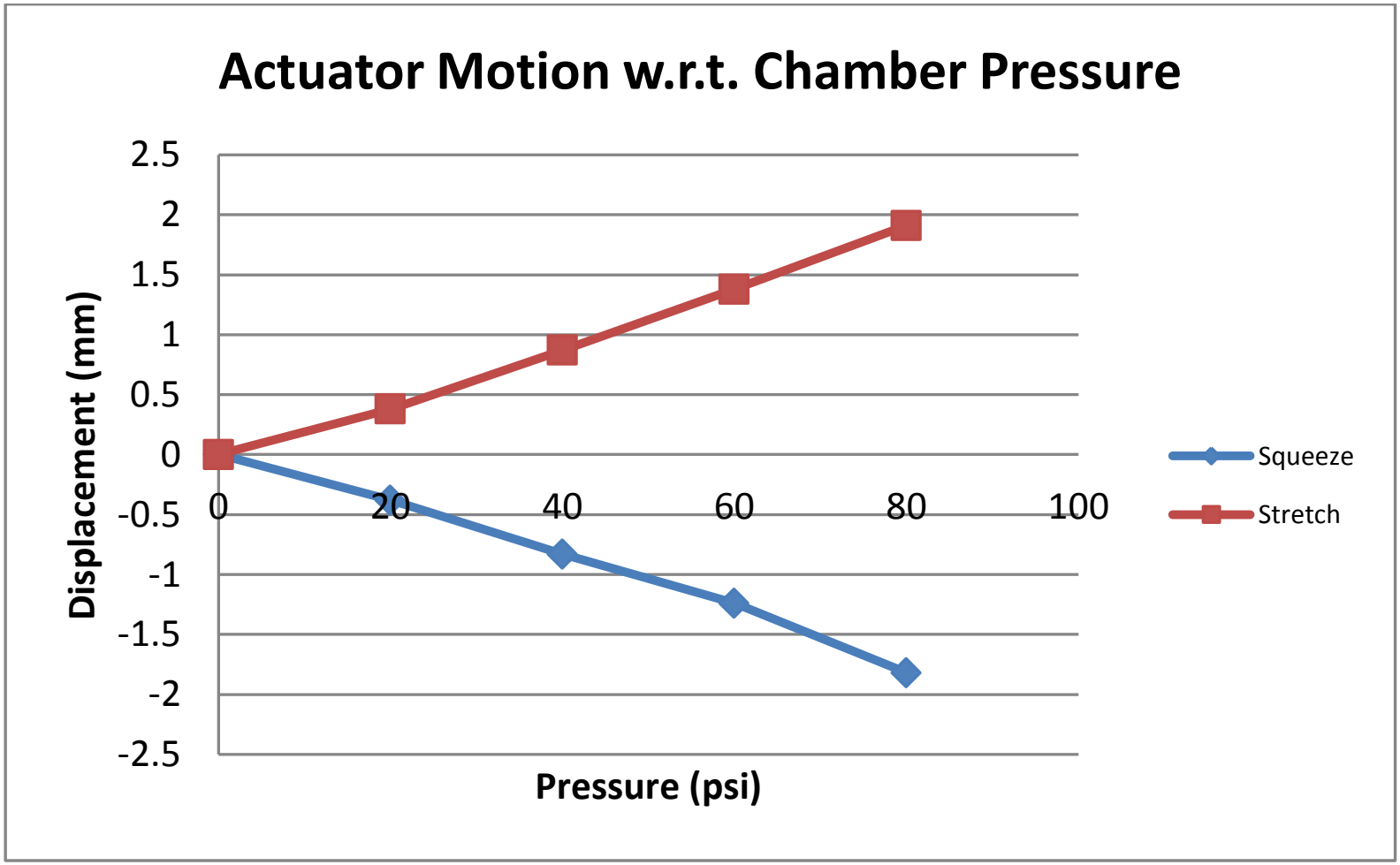
Actuator Design and Prototype

- The new actuator design and prototype complete
  - The new design greatly reduces the complexity of machining and assembly, as well as reducing overall cost
  - Functional test conducted and met the specs
  - Lifetime testing will be defined and planed.

Actuator Functional Test



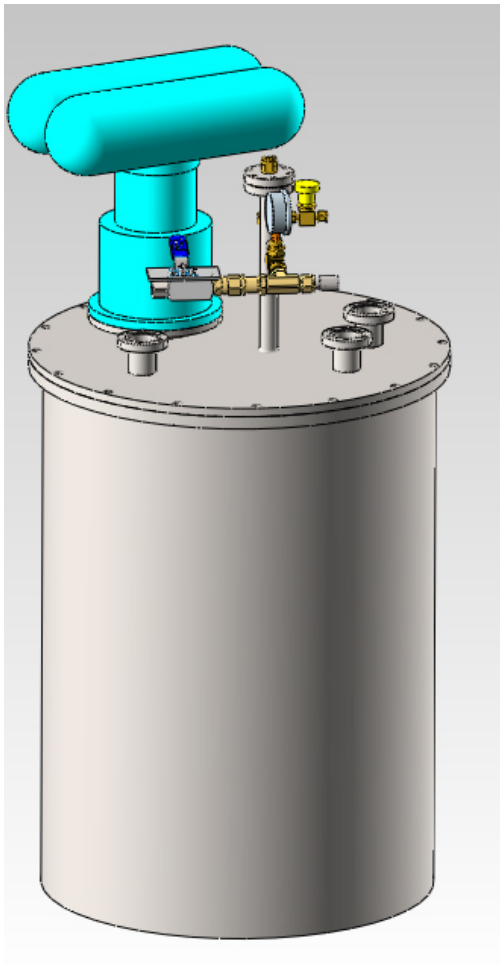
The Actuator Test Results



Cryocooler Testing

- Four tests will be conducted:
  - The performance test for the cooler of CC4D. It will be the baseline for the rest of the tests.
  - Repeat the test of CC4D with cryogenic foam excluder between the 1st stage and the 2nd stage.
  - Performance tests for another two cryocoolers which are got contaminated and then cleaned up.
- Update:
  - The baseline test started last week. The 1st stage is working properly, and has the nominal cooling capacity; the 2nd stage had lower cooling power at 4.2K. One more test will be performed to cross check the results.
  - the temperature sensors on the LHe tank were placed incorrectly in the last test, these locations have been checked and corrected.

Cryocooler Test Setup



3D model

In test