pfRICH Test Article Status

Brian Page

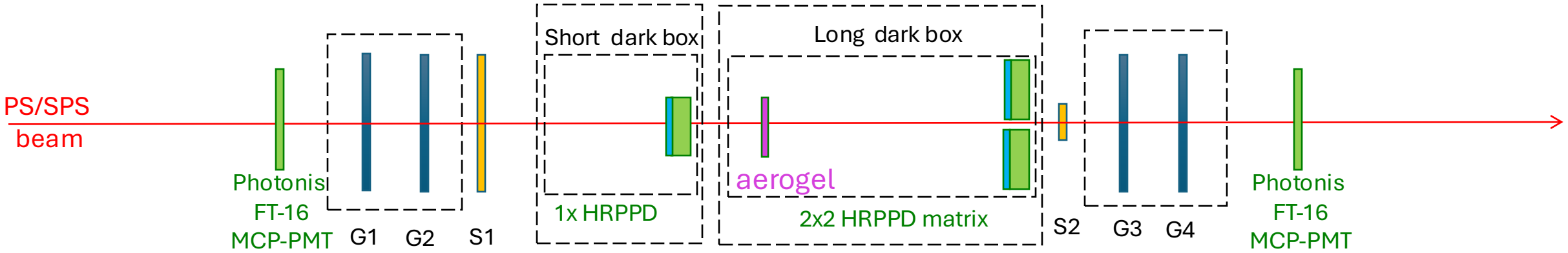
ePIC Collaboration Meeting

January 21, 2026

pfRICH Test Articles

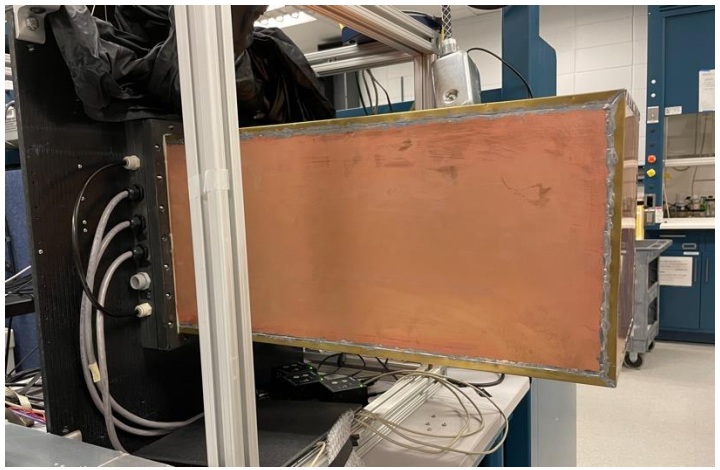
- Equipment to validate the properties and performance of components for the pfRICH
  - Proposed test beam layout
  - HRPPD B-field test
  - HRPPD aging test
  - Mirror reflectivity test
  - Vessel construction

pfRICH Test Beam Proposal (CERN PS/SPS



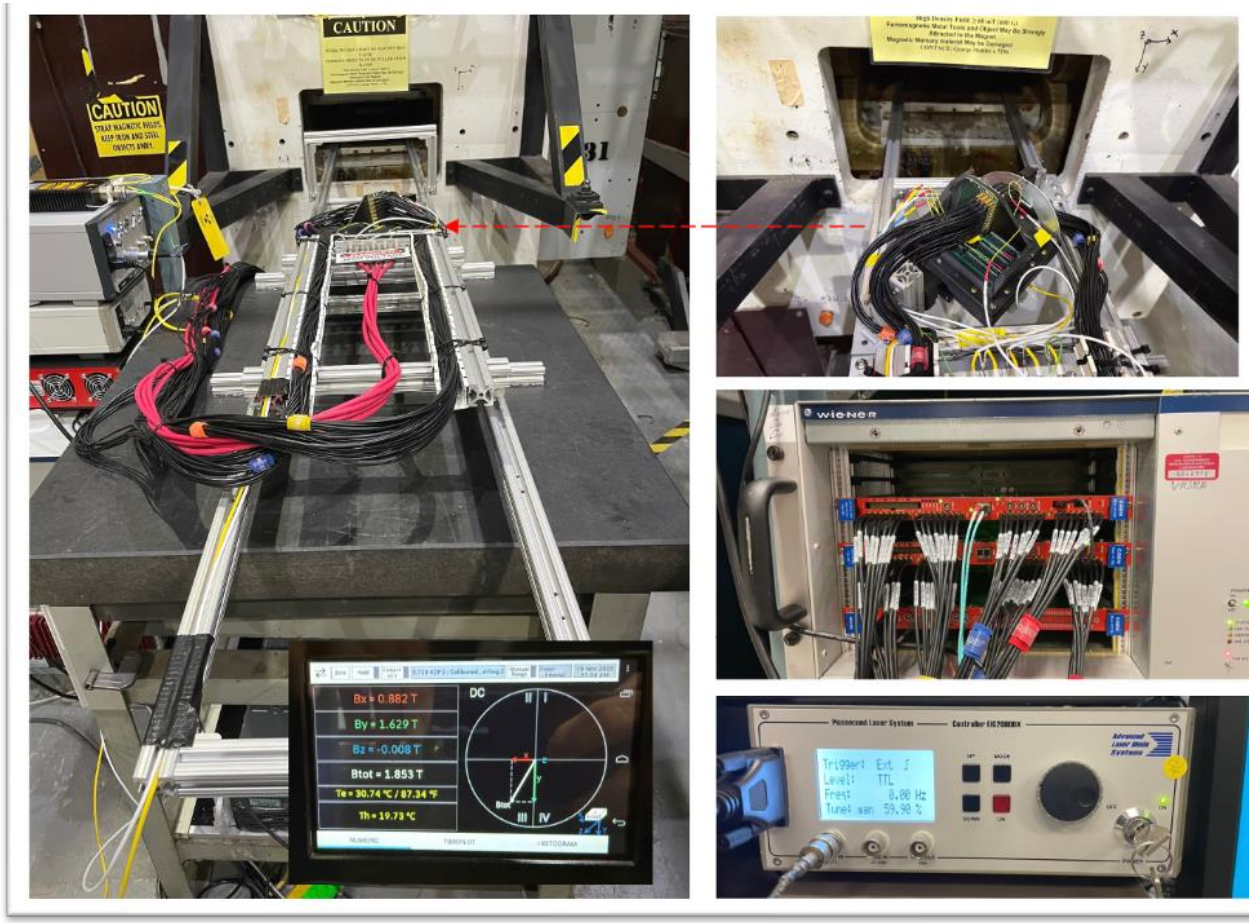
- Beam time request (parasitic with dRICH/lfHCal): one week at SPS and two weeks at PS
- S1&S2: trigger scintillators, G1..G4: GEM trackers (optional?)
- Frontend electronics: available 512 DRS4 channels (also will test first FCFD evaluation boards)
  - Equip about 1/8 of the "imaging" HRPPD pads (3-4 pad wide band along a saturated ring circumference)

- **Main deliverable** is a direct simultaneous demonstration of
  - π/K separation at ~7 GeV/c via imaging, with and without an acrylic filter
  - HRPPD performance as a t_0 reference sensor for ePIC ToF subsystems

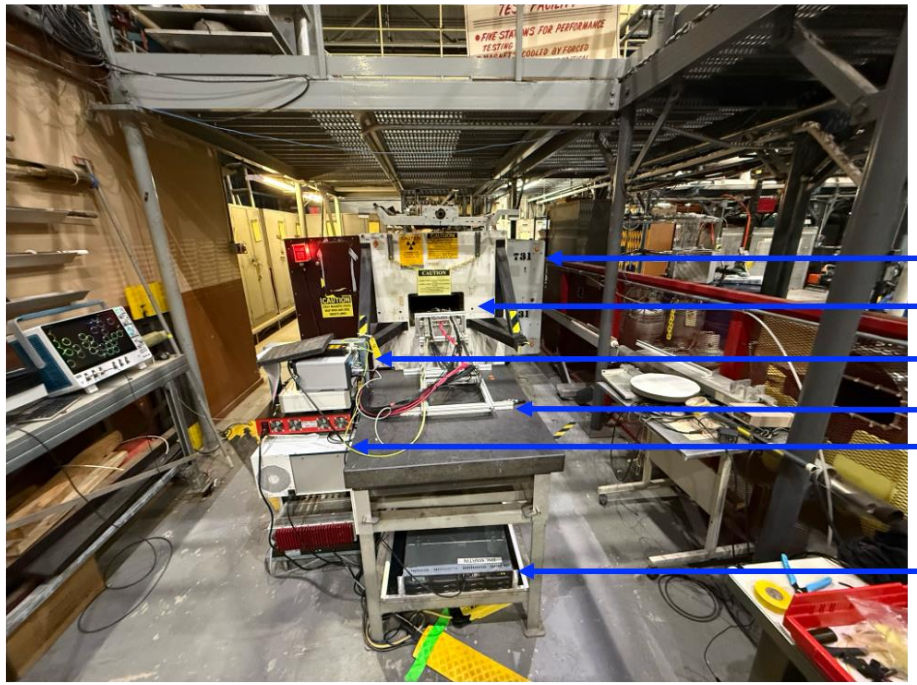


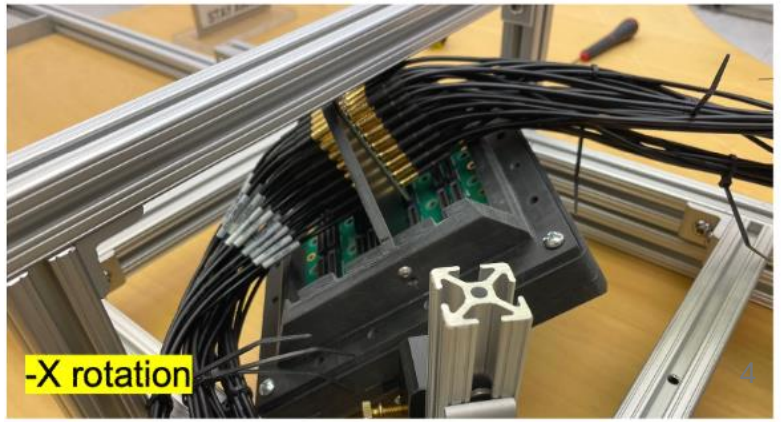
HRPPD B-Field Test (BNL)

Performance (gain, timing, afterpulsing, etc) tests of HRPPDs in magnetic field carried out at BNL and INFN

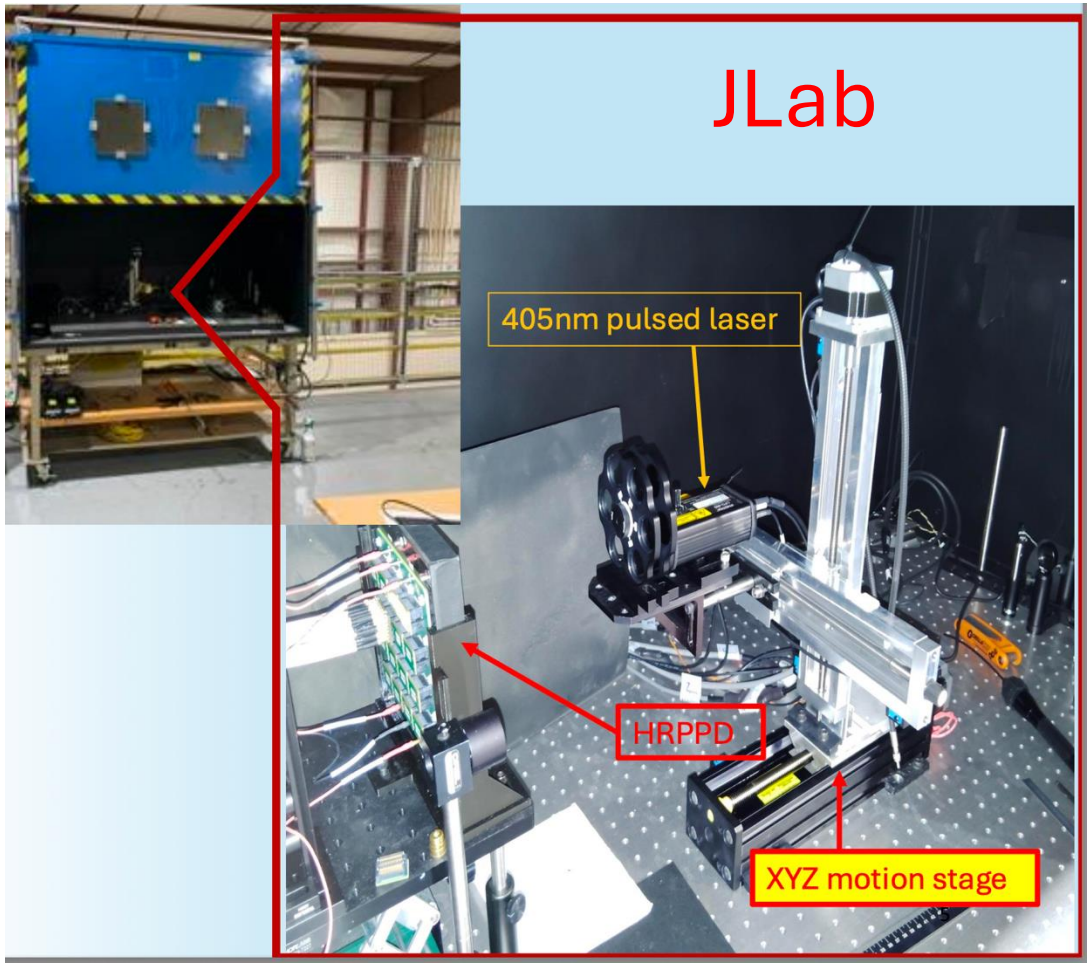


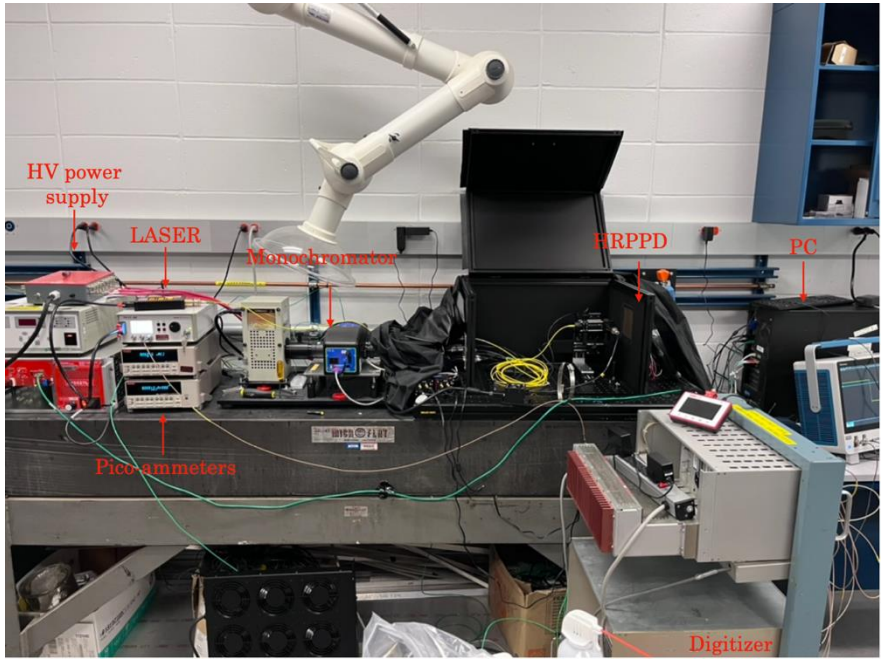
Superconducting Magnet Division (SMD) at BNL



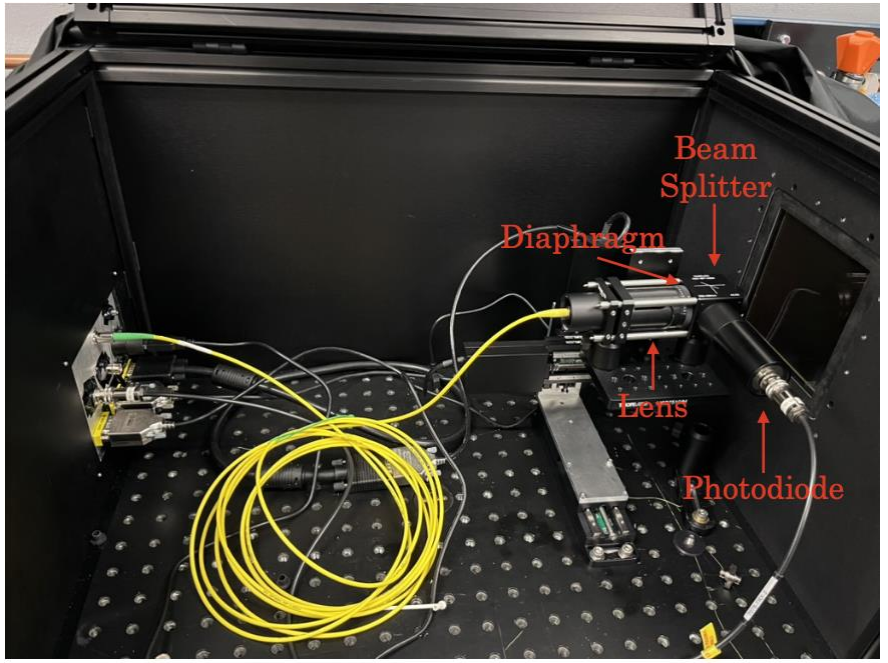


HRPPD Aging Test



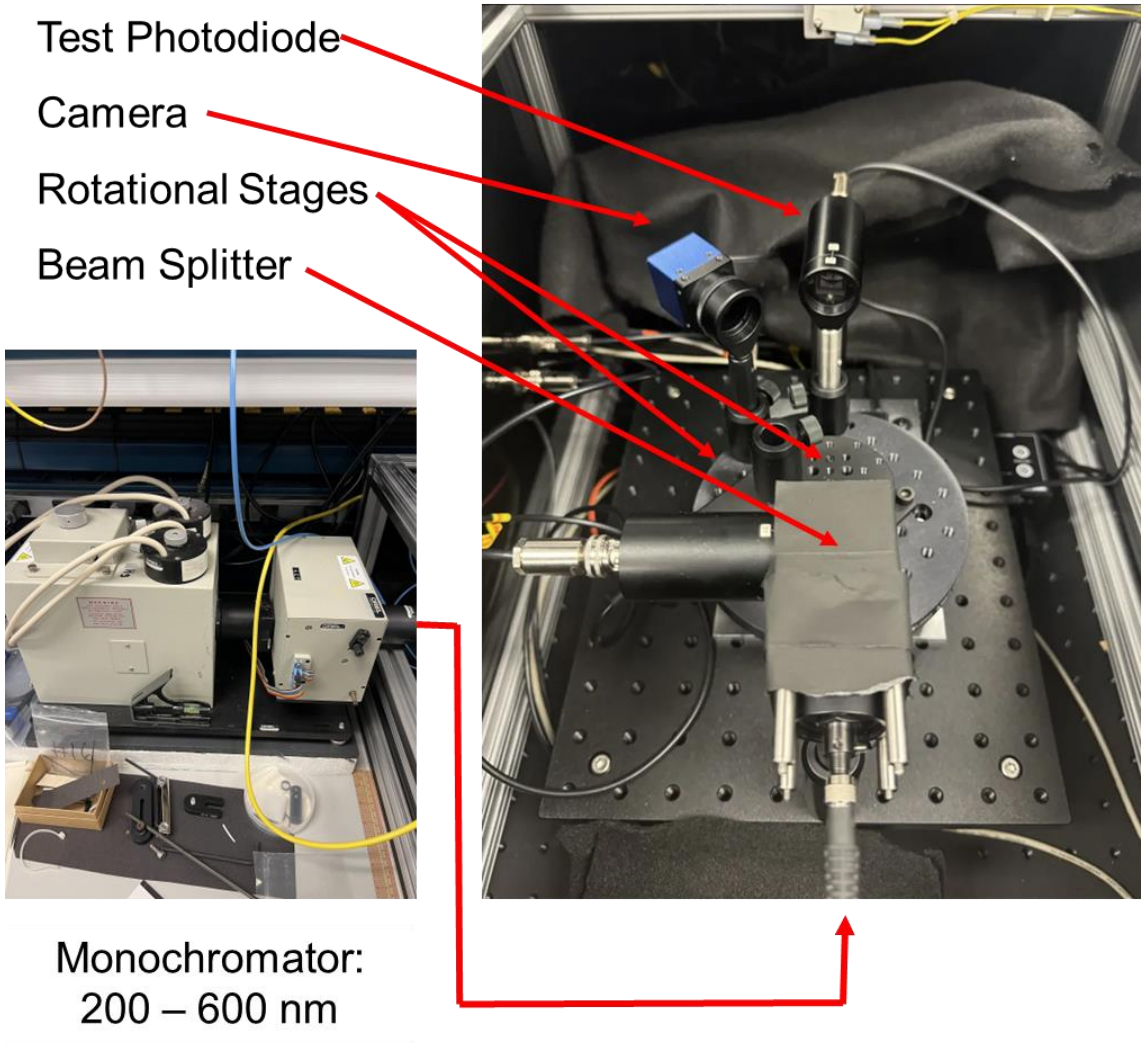


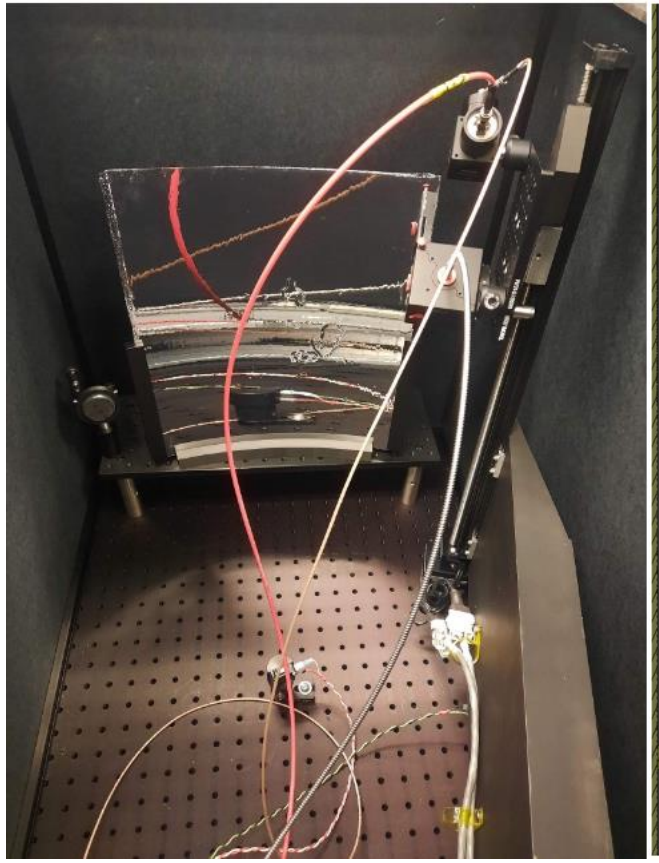
BNL

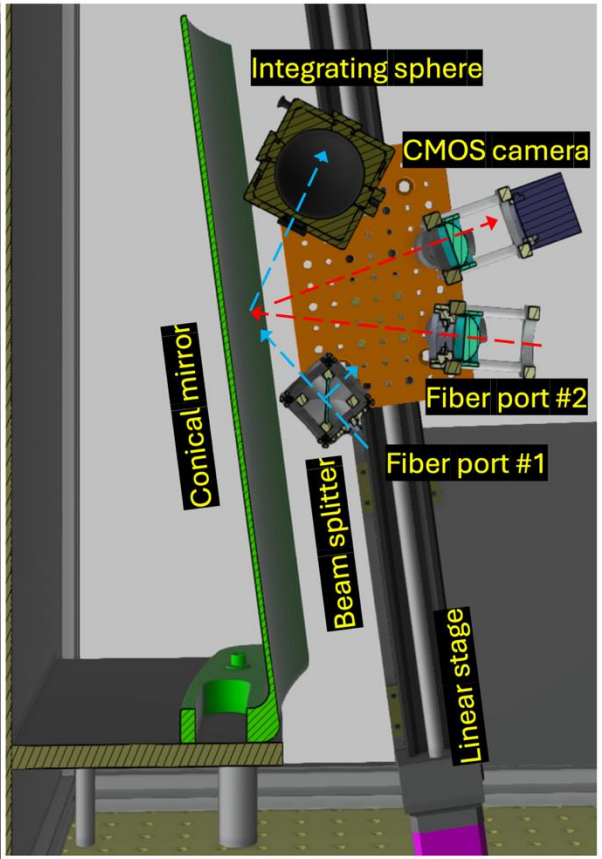


Aging studies also being carried out by INFN colleagues

Mirror Reflectivity Test

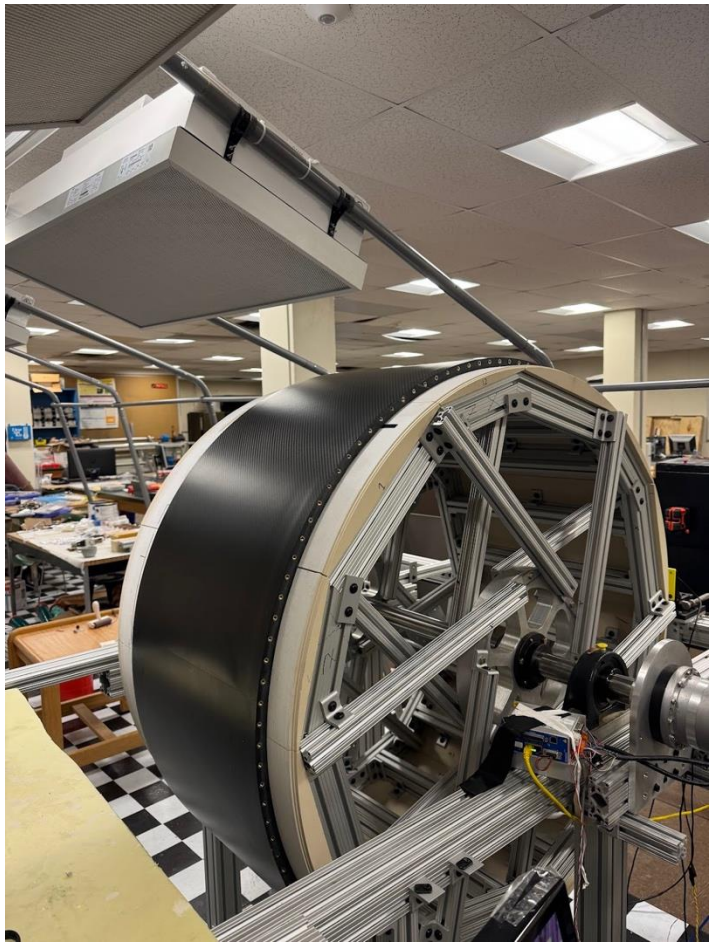


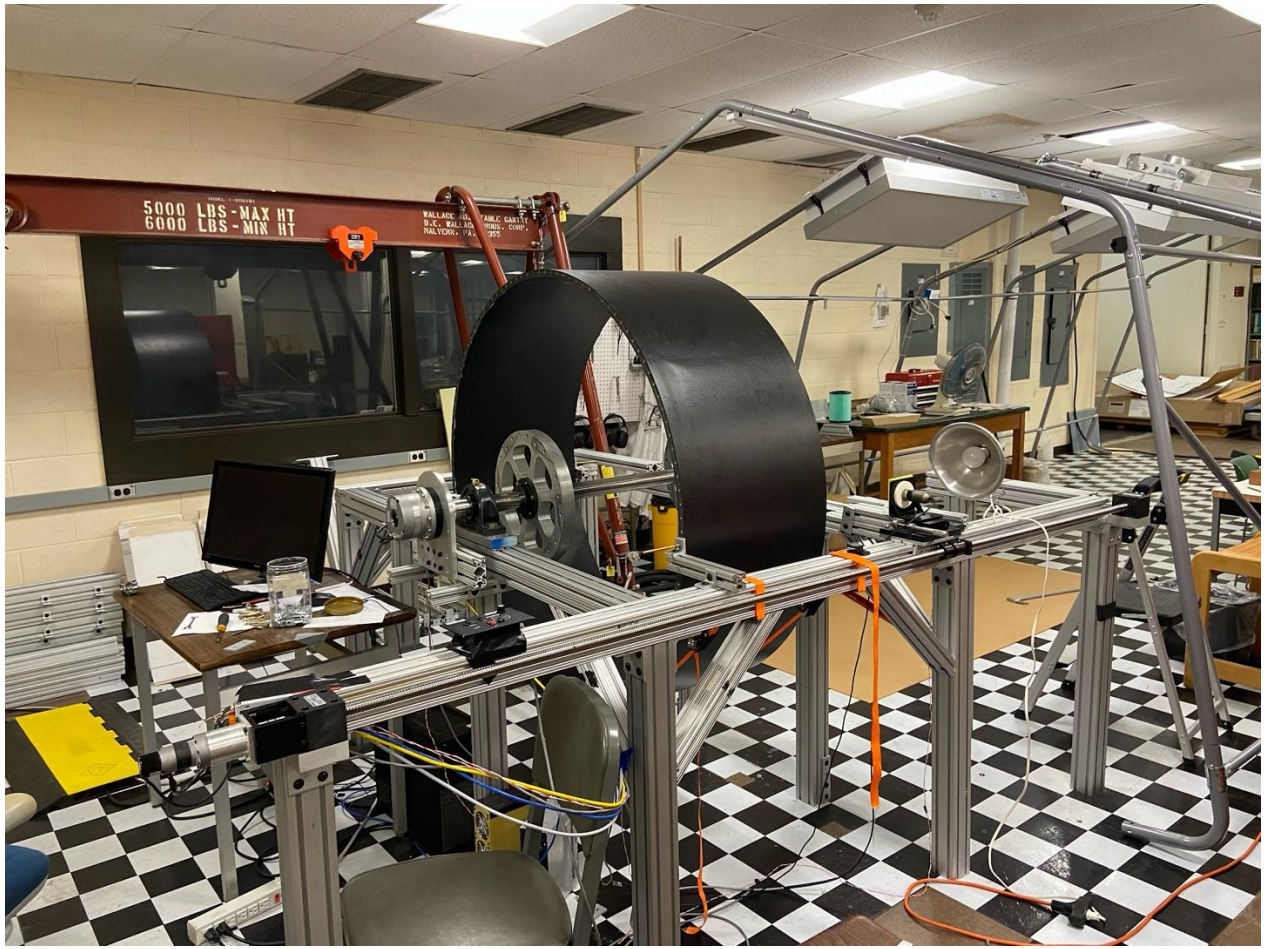




- ❑ Two mirror testing stations at BNL
- ❑ Small stand for rapid feedback to group optimizing the mirror coating procedure
- ❑ Large stand for testing of large/curved mirror samples and, ultimately, for QA'ing production mirrors

Vessel First Article





- ❑ Vessel first article production carried out at SBU
- ❑ Proof of fabrication technique and platform for future mechanical tests