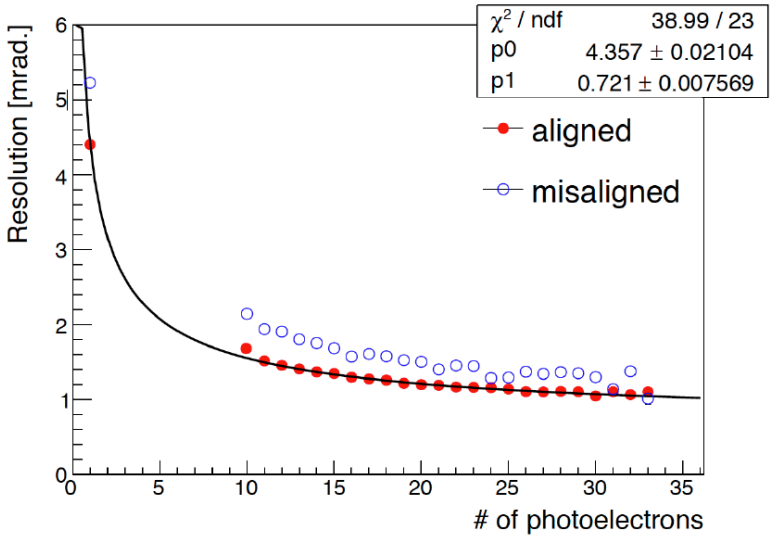
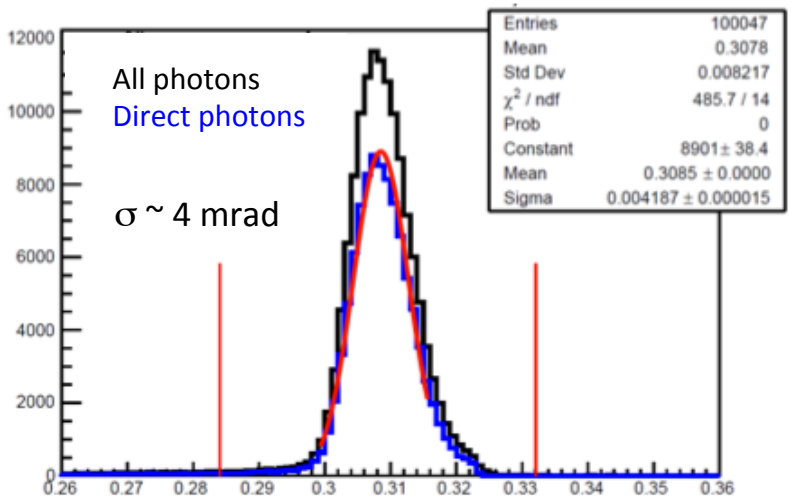
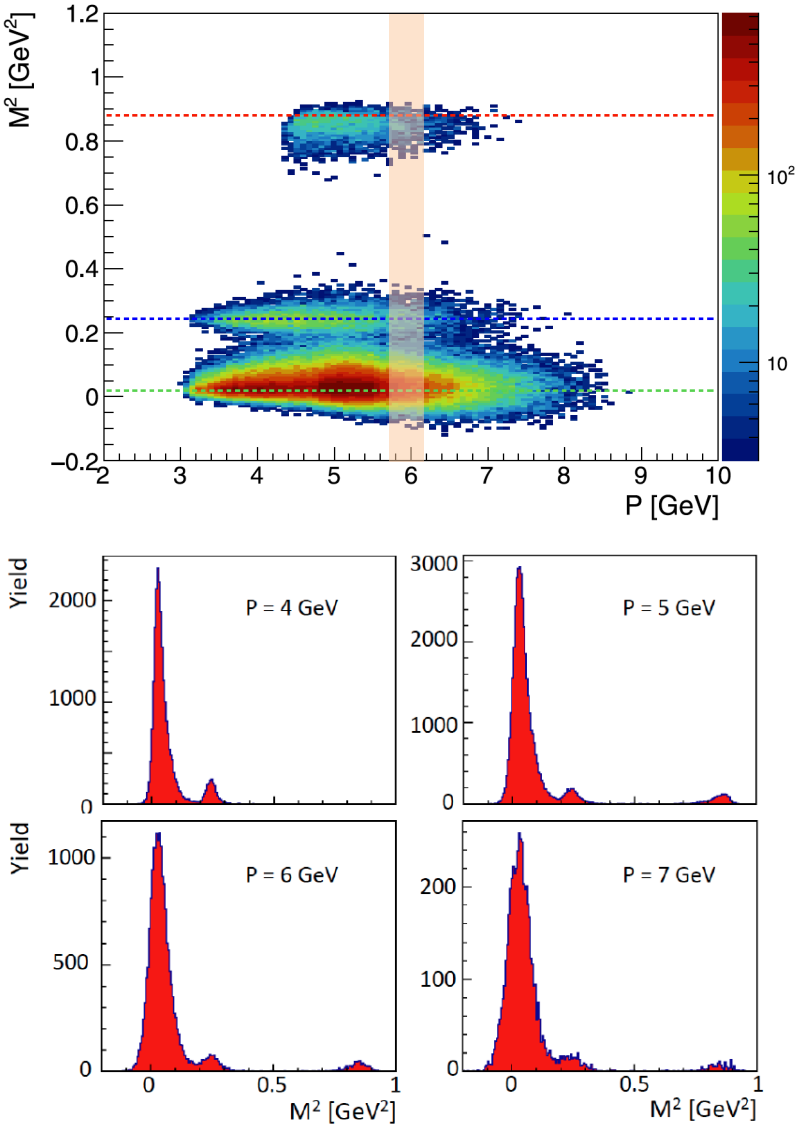
RICH alignment vs CLAS12



Mirror alignment



PID analysis for one representative aerogel tile



CLASMED: MIUR priority project

Installation at the end of 2021

In time for the start of demanding
polarized target experiments

Component production in line with JLab schedule
(only ~ 4 months delay due to COVID)
Focus on spherical mirror

Part of 2021 funds can be anticipated to 2020

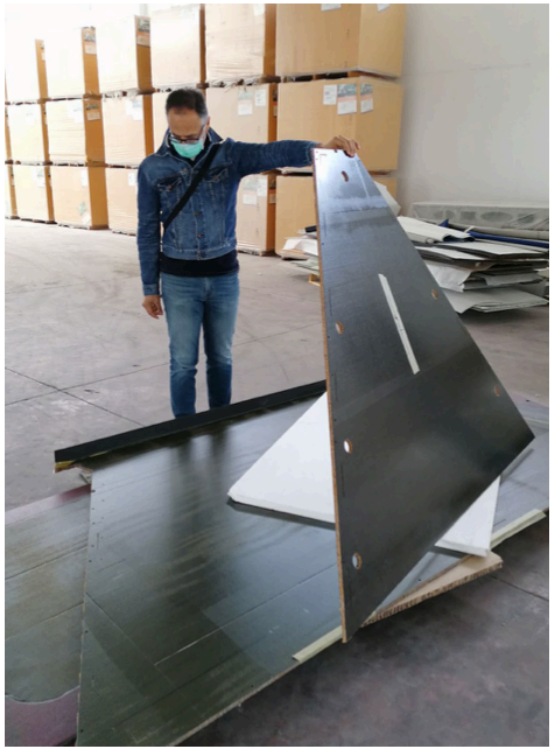
Second Module Plan (FY)	19-2	19-3	19-4	20-1	20-2	20-3	20-4	21-1	21-2	21-3	21-4	22-1
Mechanics	INFN	INFN	INFN	INFN	INFN	INFN	INFN	INFN				
Aerogel	INFN	INFN	INFN	INFN	INFN	INFN	INFN	INFN				
Mirrors				INFN	INFN	INFN	INFN	INFN	INFN	INFN		
Electronics	Shared			Shared	Shared	Shared	Shared	Shared				
MAPMTS	Shared	Shared	Shared	Shared	Shared	Shared	Shared	Shared	Shared	Shared		
Assembling								Shared	Shared	Shared	Shared	Shared
Services in Hall + Installation		JLab							JLab	JLab		JLab

INFN JLab Shared

RICH 2: Mechanical Structure

Composite materials:

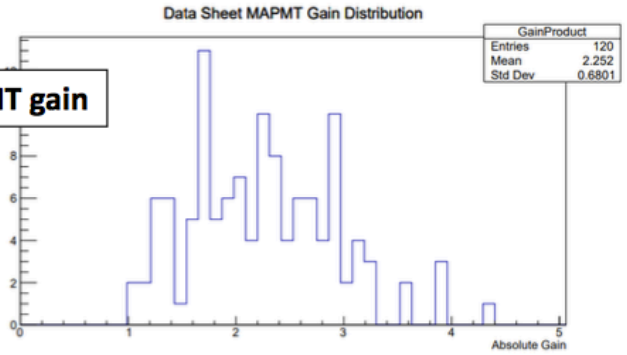
- aluminum + honeycomb / steel outside acceptance
- carbon fiber + honeycomb inside acceptance



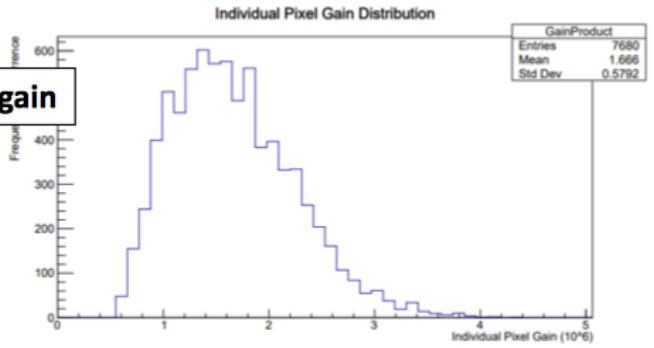
Production well advanced and large fraction already at JLab

First 180 MAPMTs of the JLab orders already delivered, tests ongoing

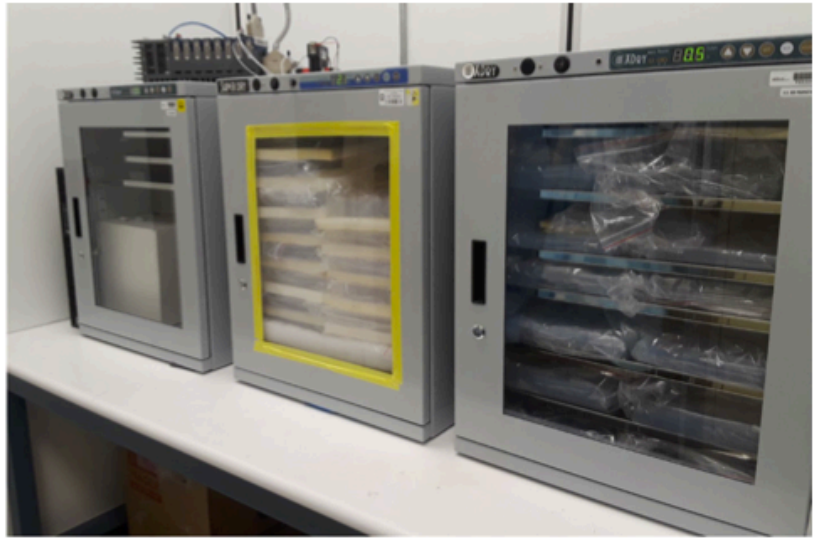
Average MAPMT gain

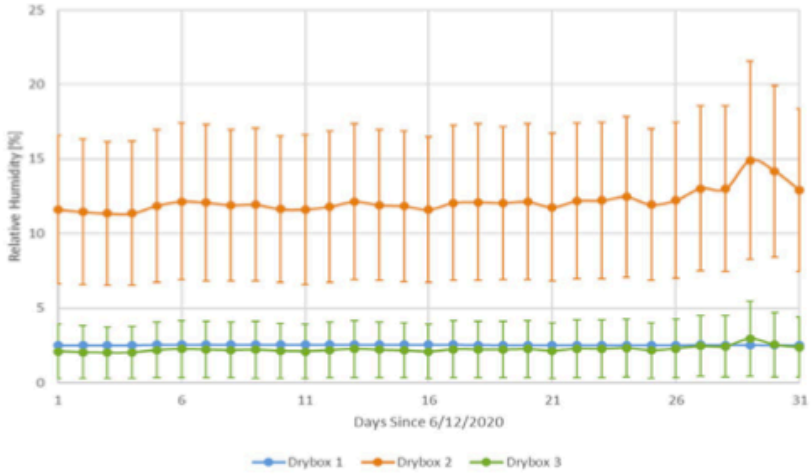


Individual pixel gain

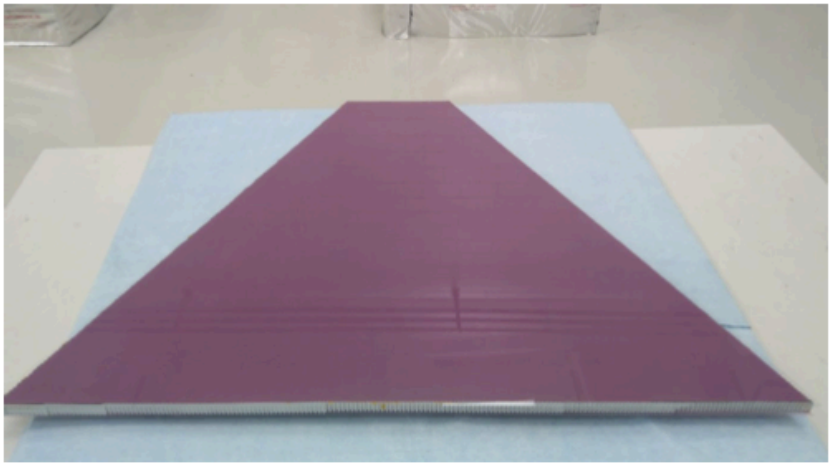


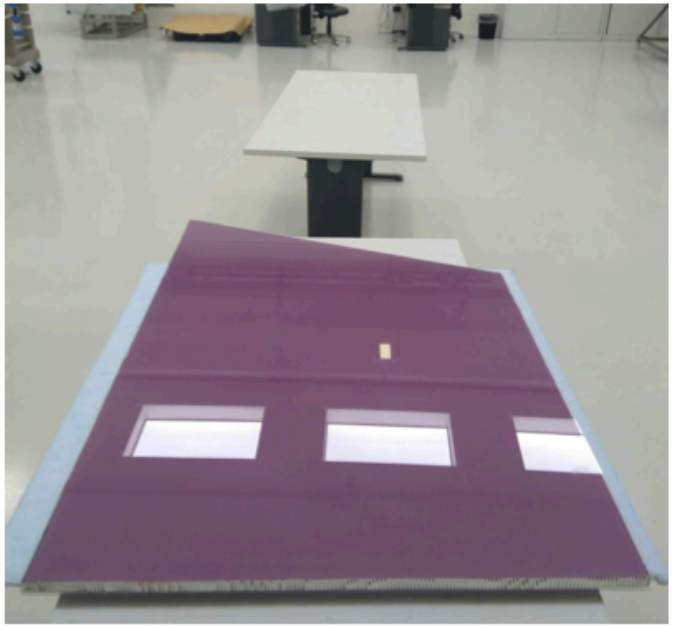
The aerogel is stored in dry boxes and remotely monitored

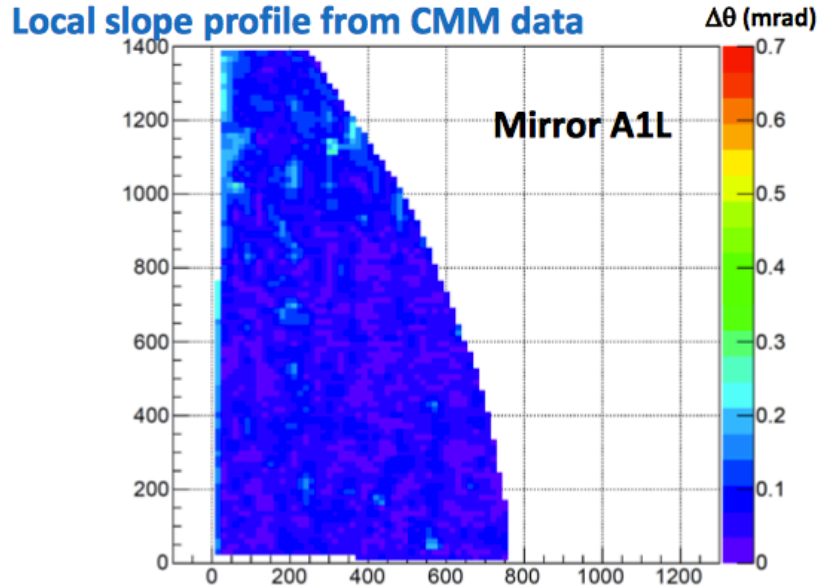


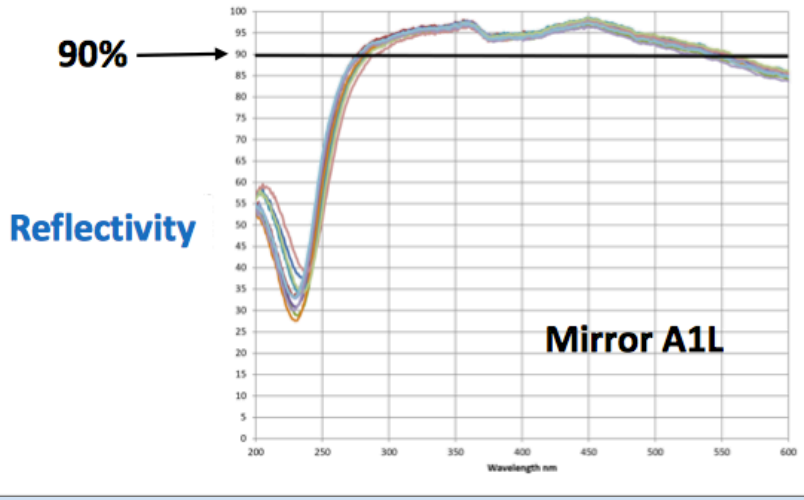


Glass skin mirrros: surface planarity better than RICH 1









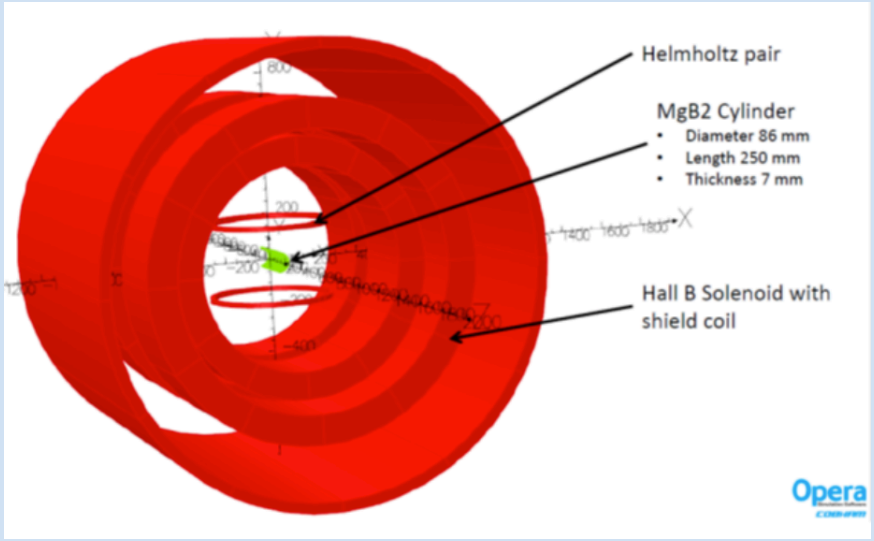
CLAS12 Transverse Target

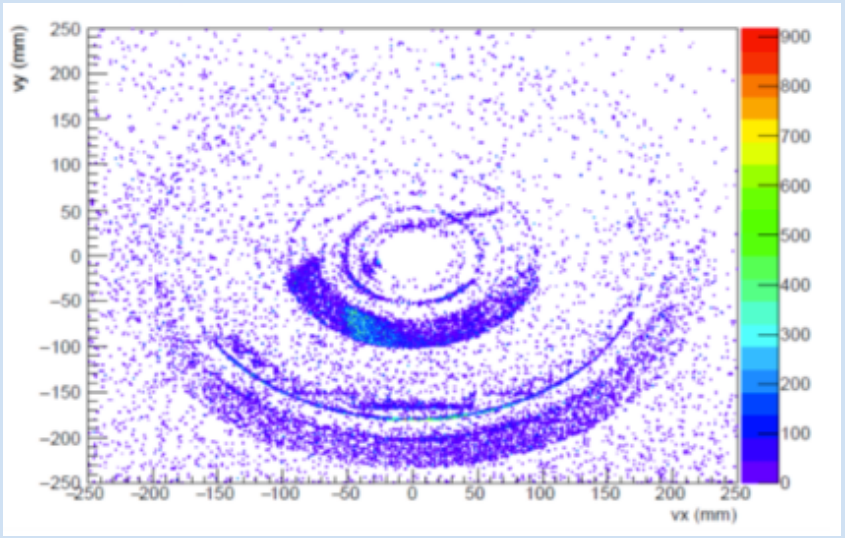
Task force appointed by JLab (Hall-B):

Type	Temperature	Field strength	Uniformity	Magnet
HD-ice*	40 mK	~ 1 T		MgB_2
Frozen spin NH_3/ND_3 target*	0.1 K	~ 1 T		MgB_2
Dynamically polarized NH_3/ND_3 target	0.3 K	~ 2.5 T	100 ppm	MgB_2
High-field stand-alone NH_3/ND_3 target	1 K	~ 5 T	100 ppm	

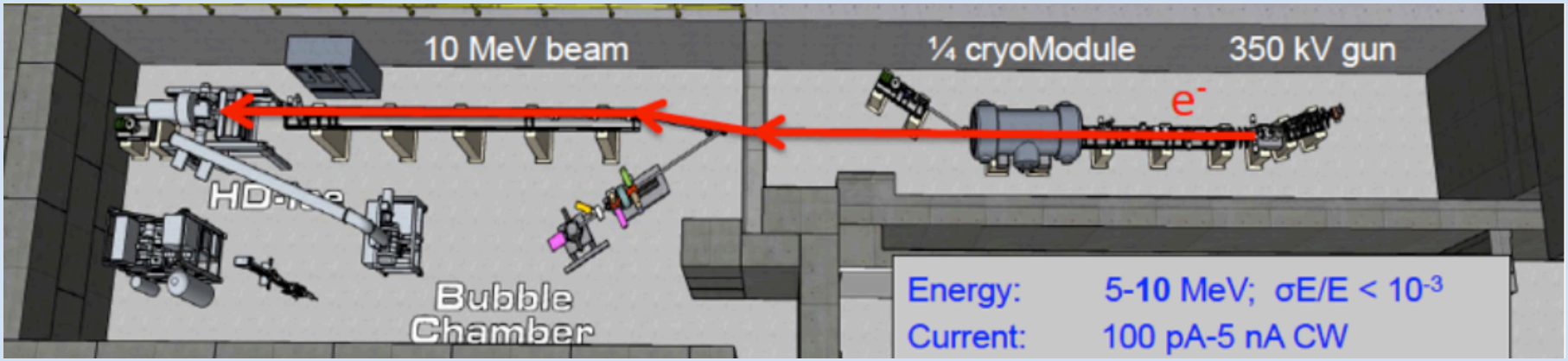
* Polarization sustainability under charged beam has to be demonstrated

Study of Moeller background containment with a target transverse holding field inside the 5T solenoid

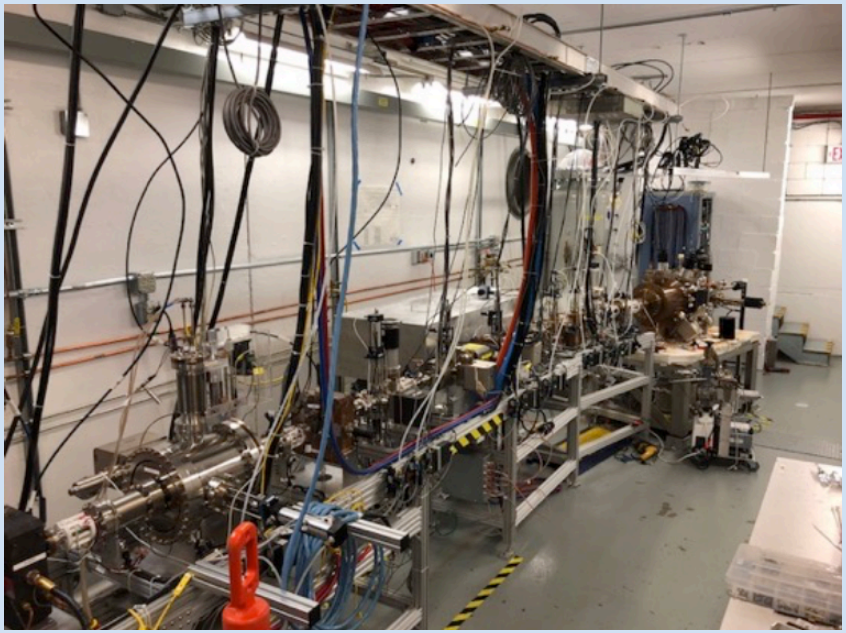


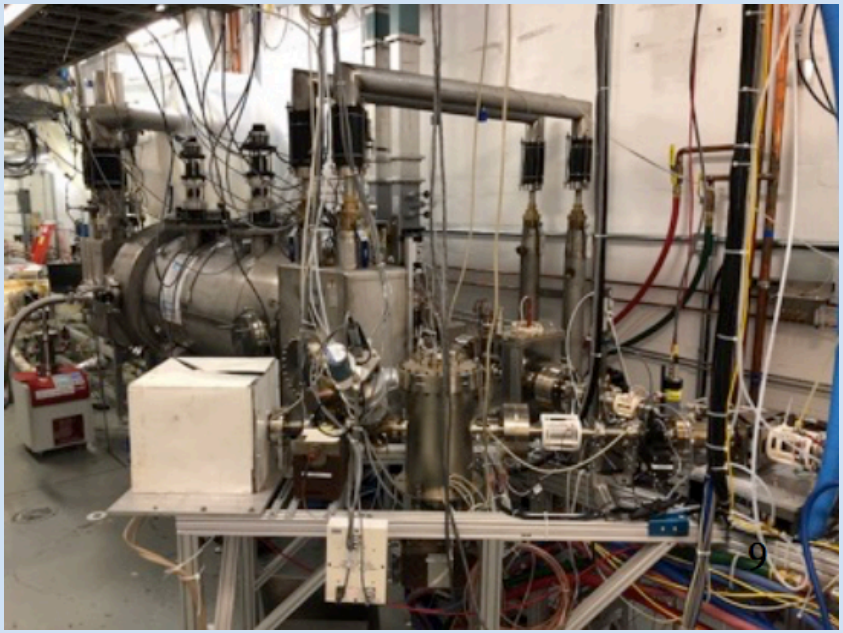


HD-ice Test Beam at UITF



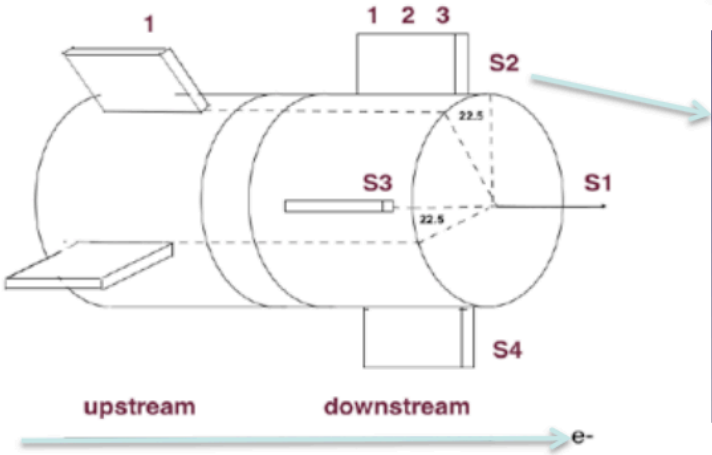
UITF beam line under commissioning: reached the target energy of 9.5 MeV

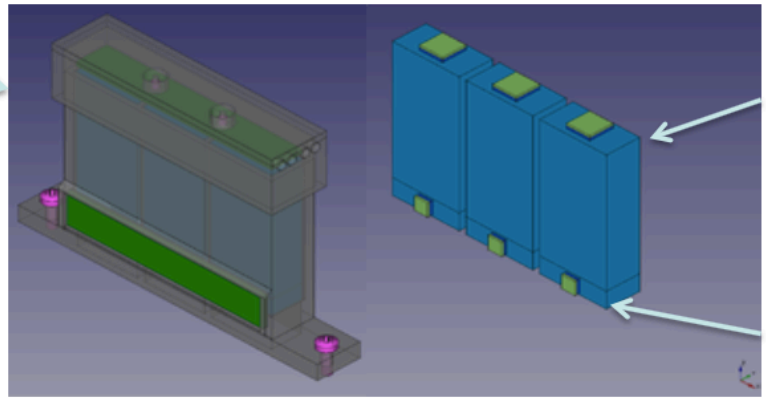




Beam Monitor

- Electron Beam Monitor: → downstream - Moeller scattering
  → upstream - elastic backscattering

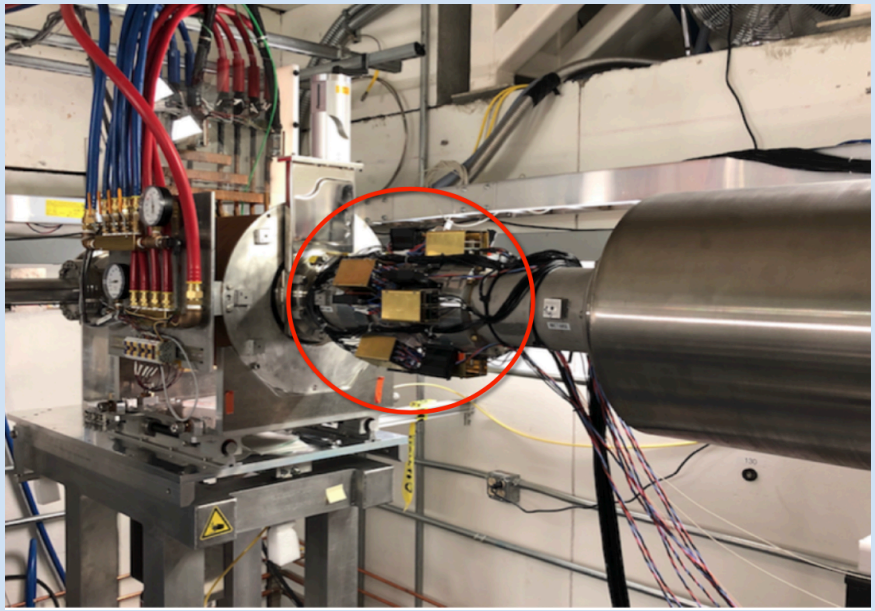


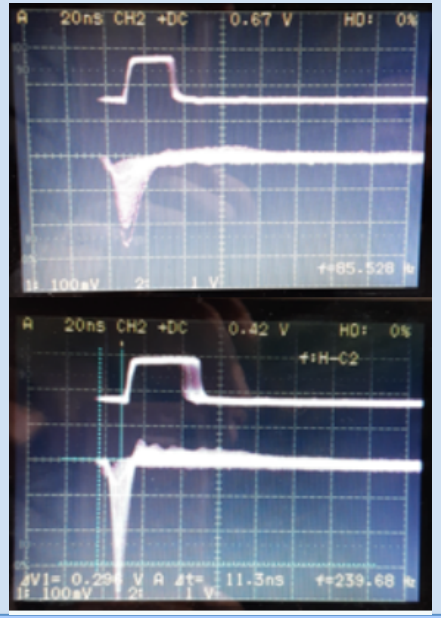


BC408
E: 20x10x38 mm
coupled to 6x6 mm
SensL SiPm

dE: 20x10x5 mm
coupled to 3x3 mm
SensL SiPm

In beam cryostat and beam monitor ready and awaiting first beam



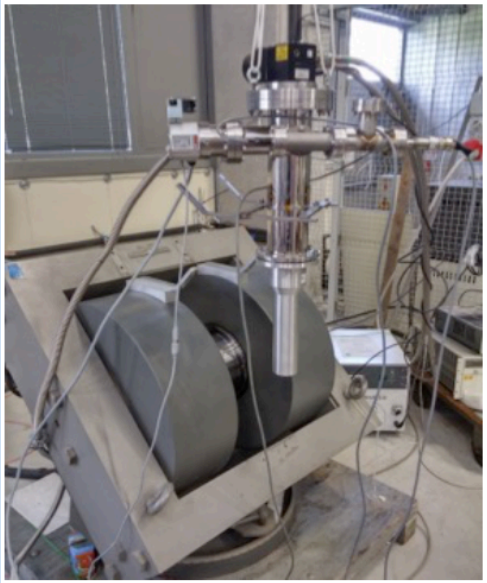


Response to Sr^{90}

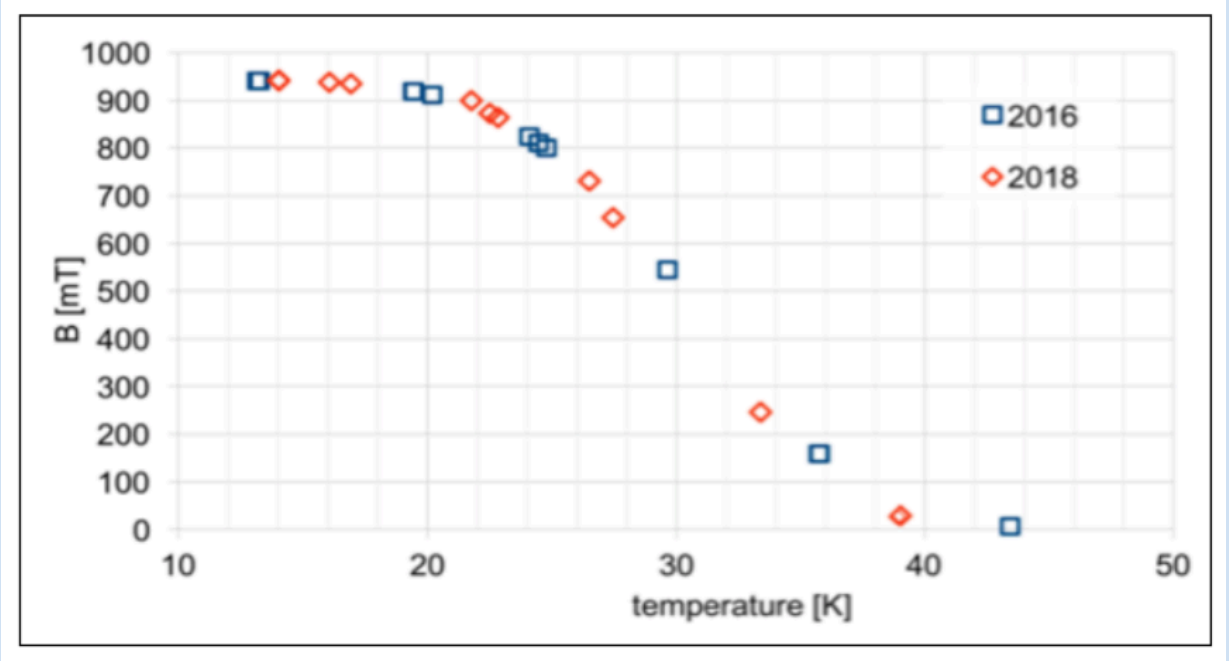
Ready for:

- rate asymmetry
- analog pulses
- trigger
- interlock

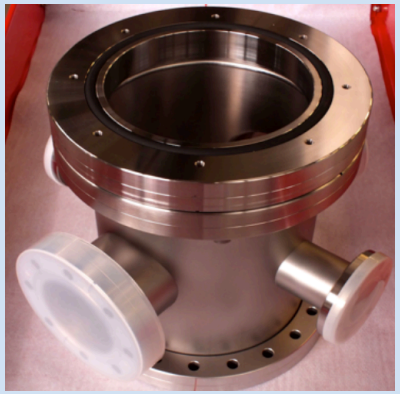
Target Holding Magnet

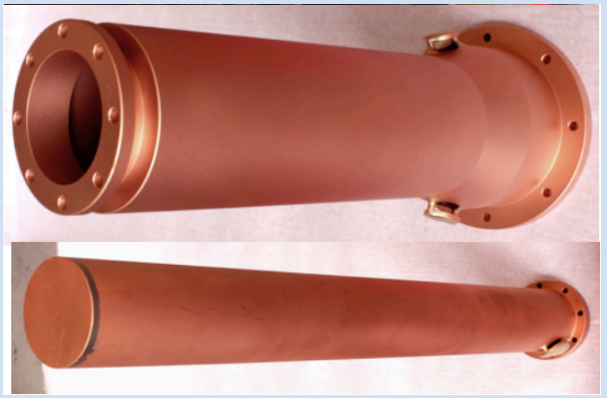


MgB_2 trapped magnetization as a function of the working temperature



New cool head and cryostat screens to improve the temperature control

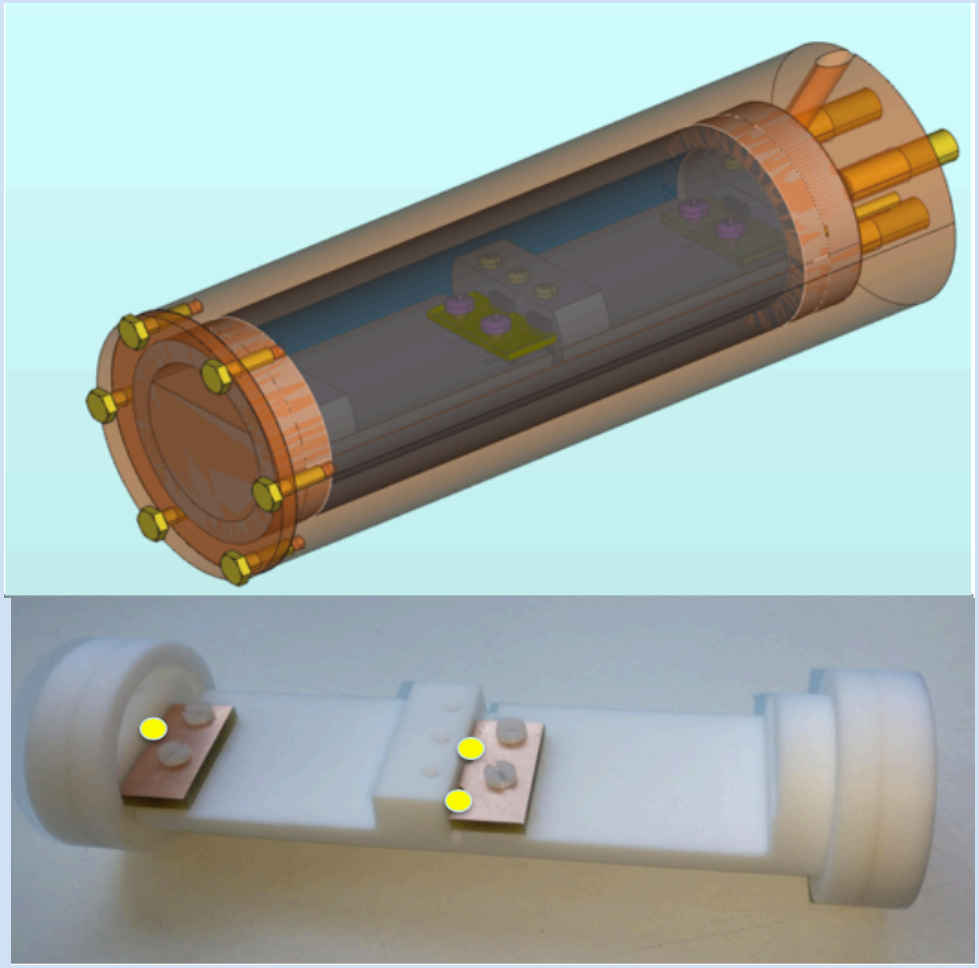




MgB_2 Superconductor

In preparation of double field test and CLAS12 application

New MgB_2 holder to allow
- filed map (6 Hall probes)
- fast sample exchange



MgB_2 characterization with SQUID magnetometer