

# **Purity Monitors for ProtoDune**

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Andrew Renshaw (U of Houston)

Marvin Marshak (U of Minnesota )

# Outline

- UCI, UH and UMN are involved
- 3 PrM in the cryostat
- Refurbished mechanical components from ICARUS (received)
- Build electric/optical feedthroughs (unless found at CERN)
- Build electronics and DAQ
- Buy Xenon light sources, developing LED light sources

# Responsibilities

## Jianming Bian (UCI)

- Interface with cryostat WG to define flanges and mounting string
- Interface with the DAQ and slow controls WGs to define monitoring and readout
- Interface with CERN to define the conventional facilities that are required
- Refurbishment and testing of components
- Deployment and operations

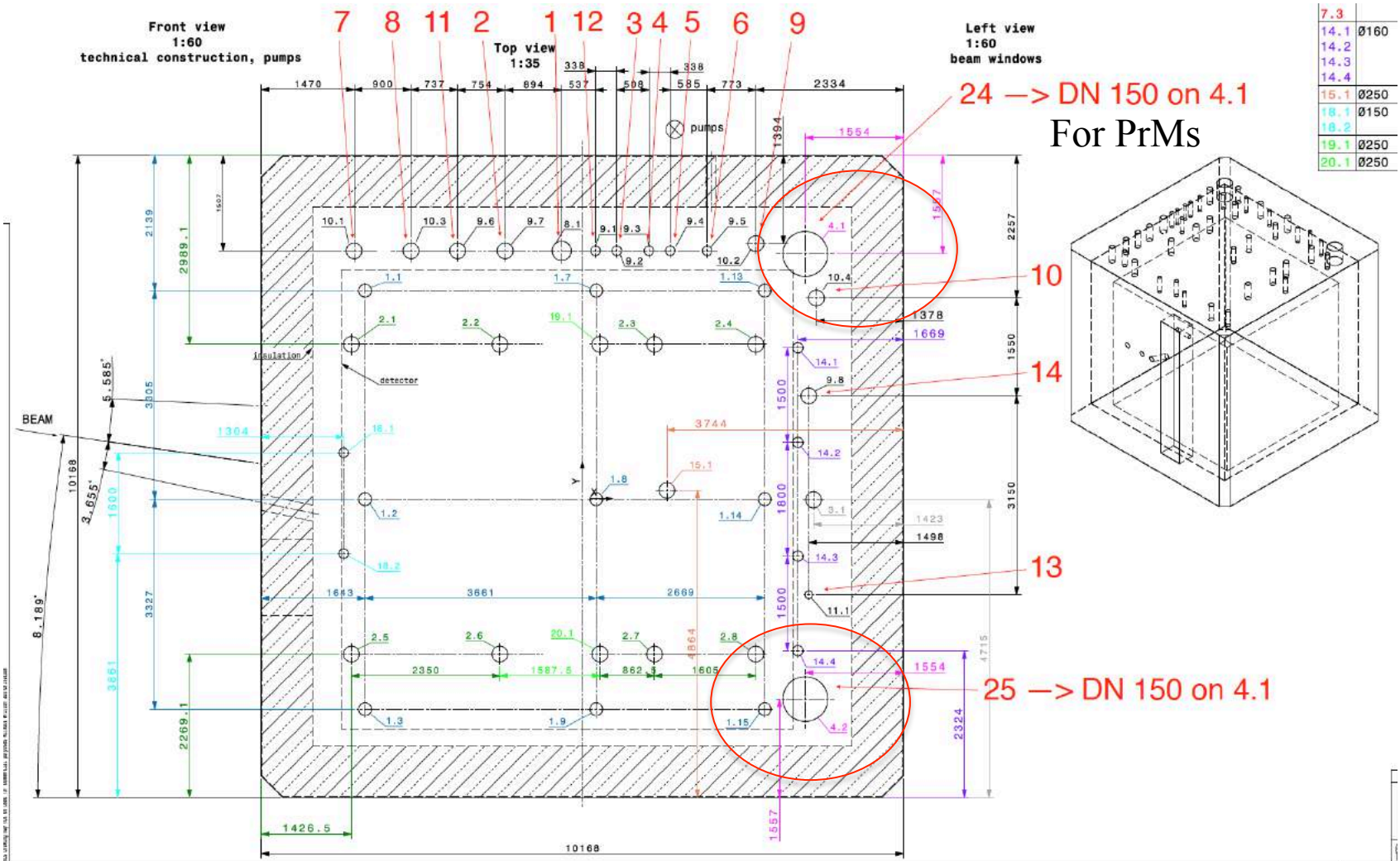
## Andrew Renshaw (UH)

- Interface with cryostat WG to define placement of PrM on the floor
- Interface with Cryogenics WG to define inline PrM vessel
- LED light source development
- Refurbishment and testing of components
- Deployment and operations

## Marvin Marshak (UMN)

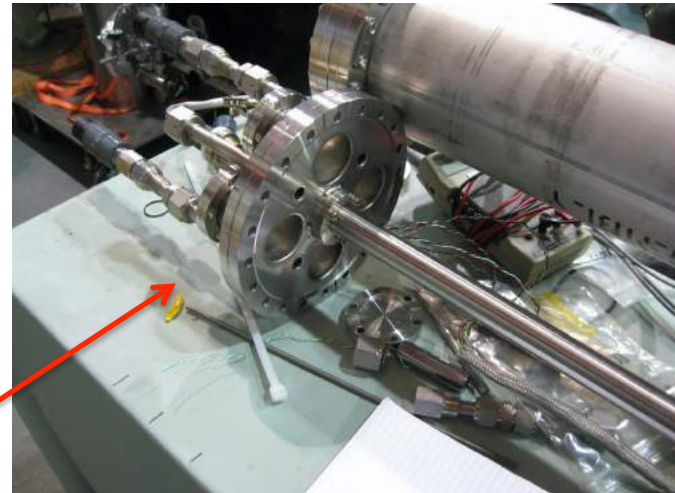
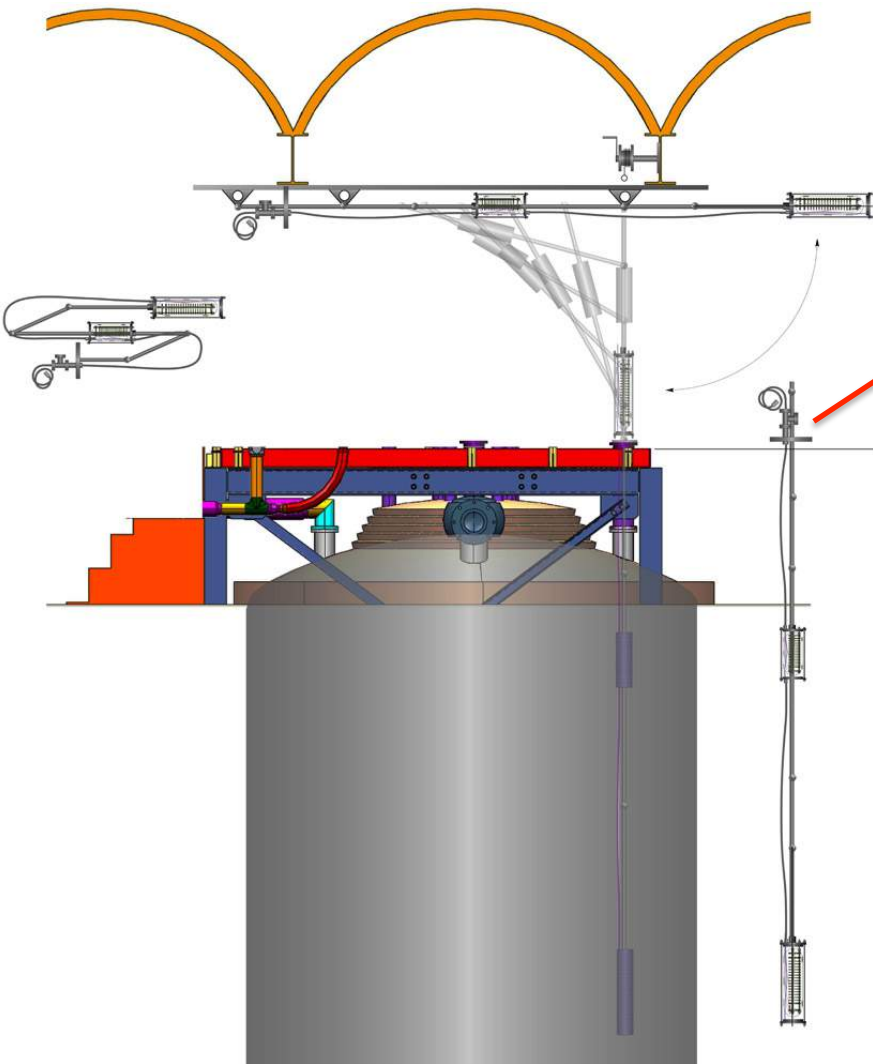
- Interface with the installation WG to define installation process and timeline

# PrM Mounting



# PrM Mounting

From the top flange

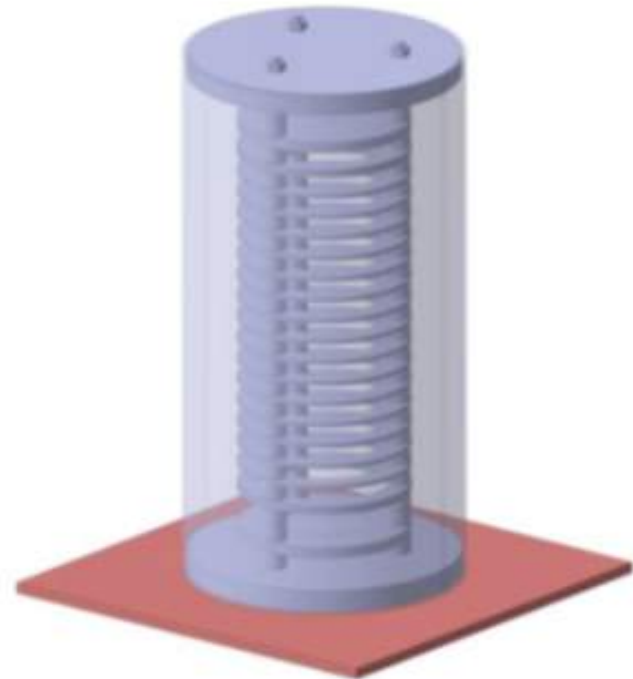
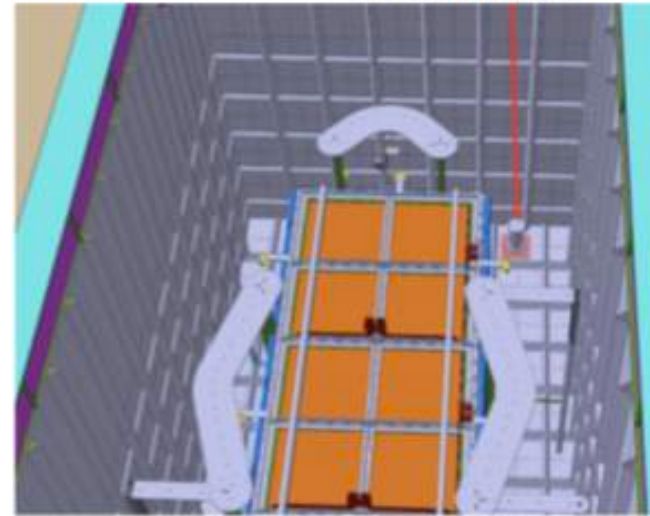


# PrM Mounting

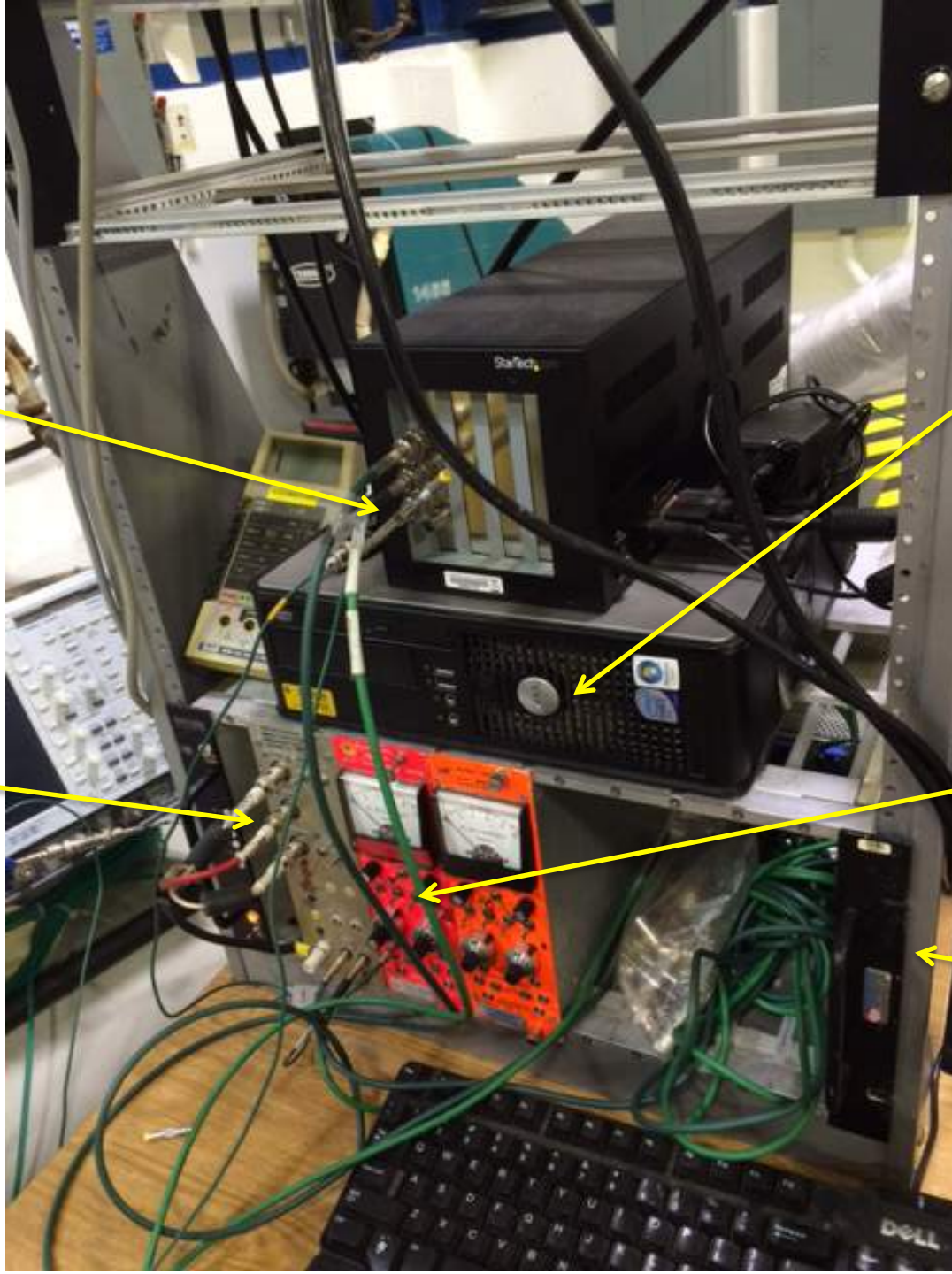
## On the bottom plate

- One PrM placed on plate on floor of cryostat, plate held to floor with Stycast epoxy (Weight of PrM < 2kg)

PrM in WA105



# DAQ



Digitizers

PrM electronics  
Signal:  
2 channels –  
cathode, anode  
< 5V

Need to  
Develop slow  
control

DAQ PC  
110V

PrM HV  
Cathod -150V  
Anode 2500V

NIM Bin  
110 V

# Light source

- Hamamatsu Xenon source (1J/flash), one at UCI
- LED being developed at UM
- Newport Xenon source (5J/flash), manufacturer resumed production



Light source power supply, shielded by an aluminum case, 24 V



# Light source at Fermilab

Light source



# First test

- Test stand setup at UCI
- Have fabricated a new Faraday cage for the test
- Have bought necessary parts for the test
- **New wiring is needed**

