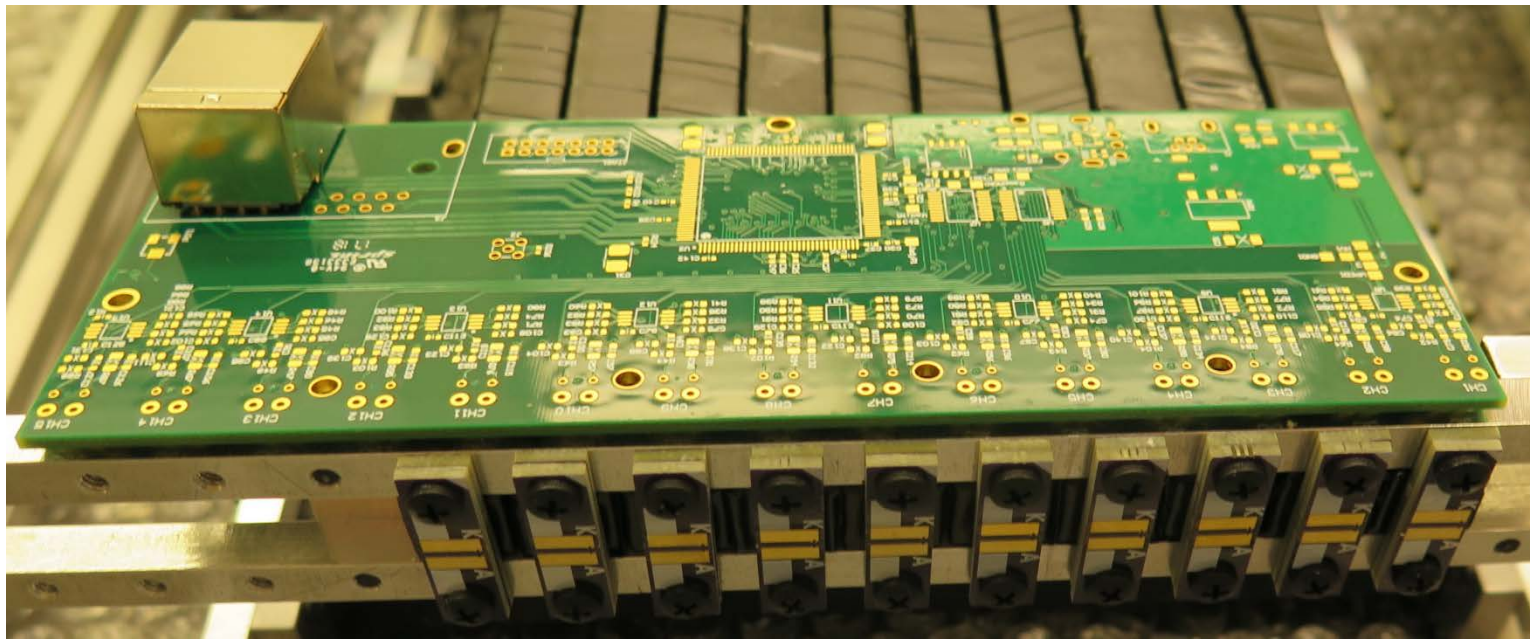


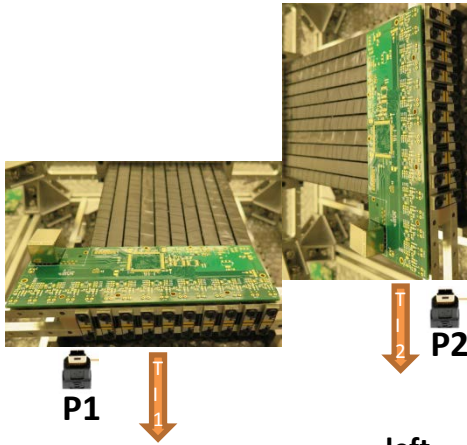
# mRICH TARGETX-based readout Preparation for FNAL Beamtest 30-APR-2018



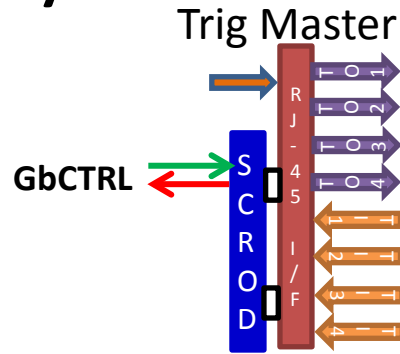
**Current Status**

**Julien Cercillieux, Tommy Lam, Khanh Le,  
Emily Lum, Gary Varner**

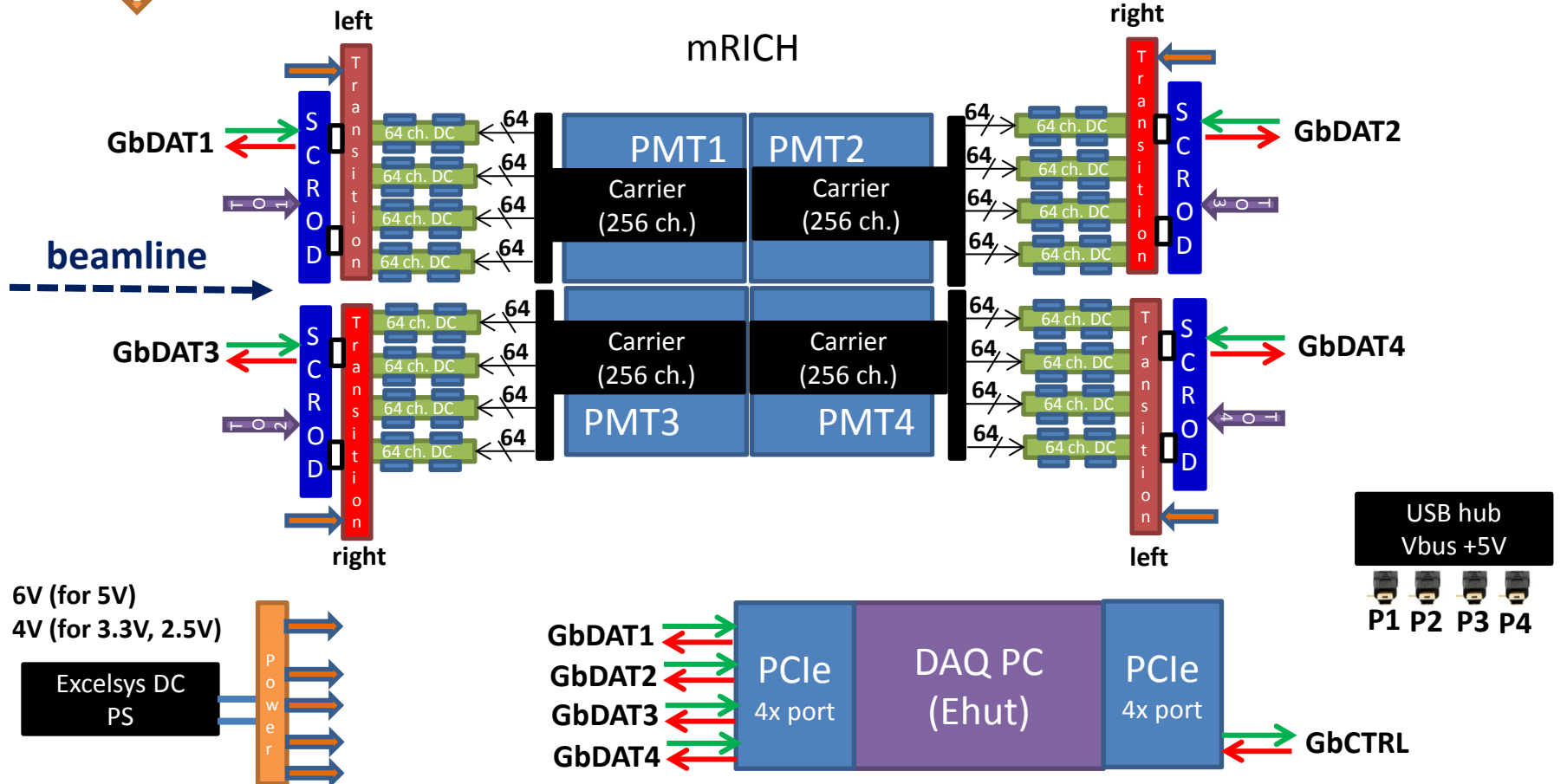
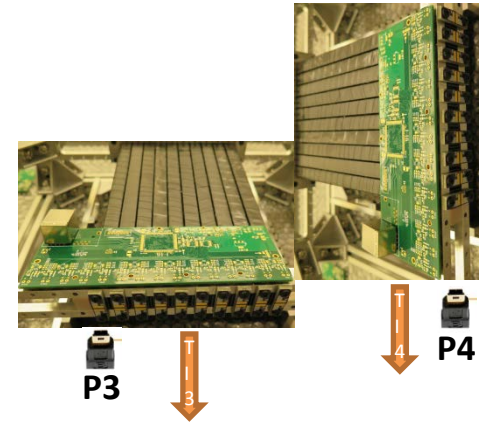
## Front hodoscope



# System Overview



## Back hodoscope



# Wiring Legend

## Data/Control

  **Giga-bit bi-directional fiber optic link**

## Trigger (TrigIn, TrigOut)

  **CAT 5/6/7 (RJ-45)**

## Power (4-conductor Molex)

 **6V-GND, 4V-GND**



**USB Mini-B (5V Vbus)**

5V (regulated): 5x SCROD boards x **0.5A**  
3.3V (regulated): 5x SCROD Fiber Tx/Rx x **1A**  
2.5V (regulated): 4x PMT x 4DC x **1A**

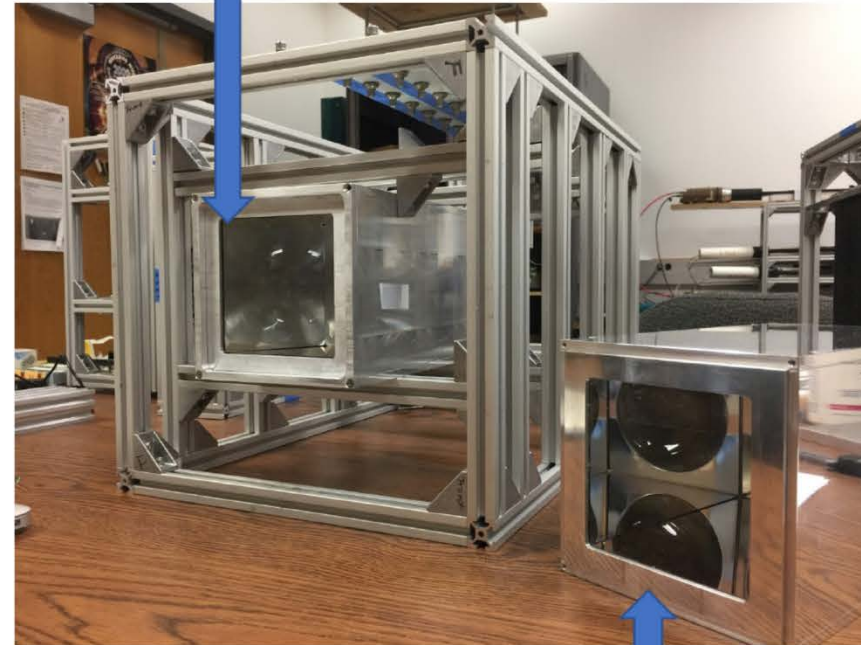
# Board Fabrication status

#	IDL Manifest	Board description	Shorthand	Status
1	IDL_18_014	BMD/Hodoscope TX DC	Hodoscope DC	Assembly
2	IDL_18_010	PMT to DC Carrier	Carrier	RFQ (post design review)
3	IDL_18_011	TX Daughtercard	64 Ch. DC	Layout
4	IDL_18_012	DC – SCROD transition L	Transition Left	Gerbers
5	IDL_18_021	DC – SCROD transition R	Transition Right	Layout
6	IDL_18_020	SCROD – RF-45 I/F	Trig Master	Layout
7	IDL_18_0vv	Power distribution+fusing	Power fanout	Design

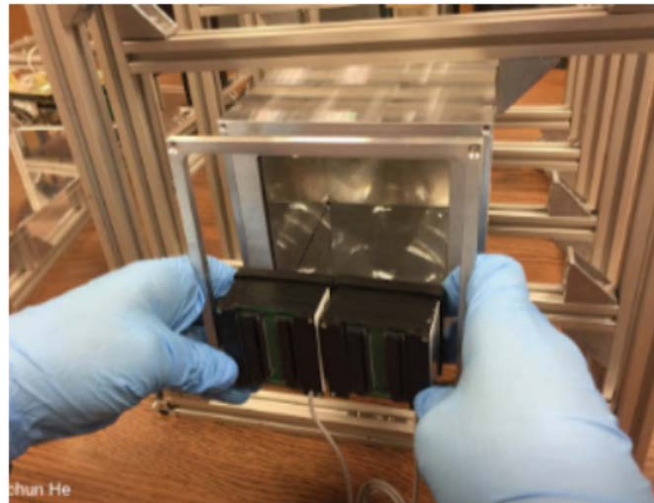
# Detector to be tested

- We constructed two mRICH holder boxes. One is for using Fresnel lens ( $f = 6''$ ) and the other is using a spherical lens ( $f = 8''$ ). The same readout electronics can be attached to the end of the holder box.
- The design drawings are appended at the end of this document.
- The following slides show the details of the holder box so that a proper readout electronics can be developed.

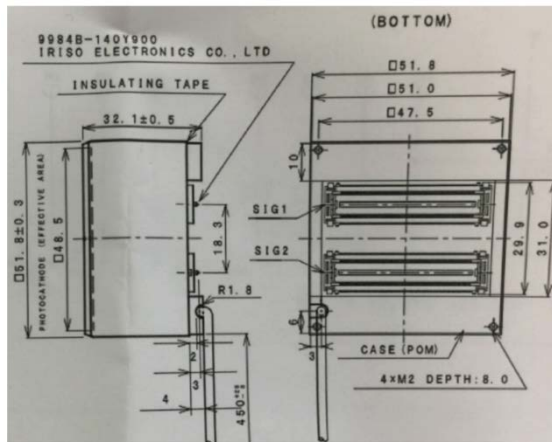
mRICH with Fresnel lens



mRICH with spherical lens

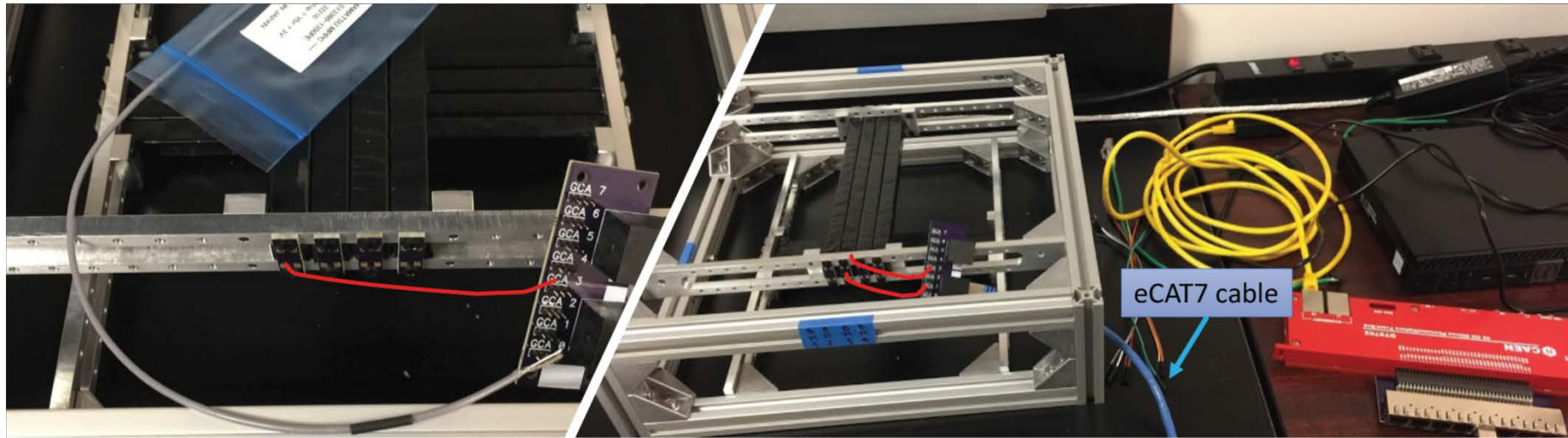


4 x 256 channel readout

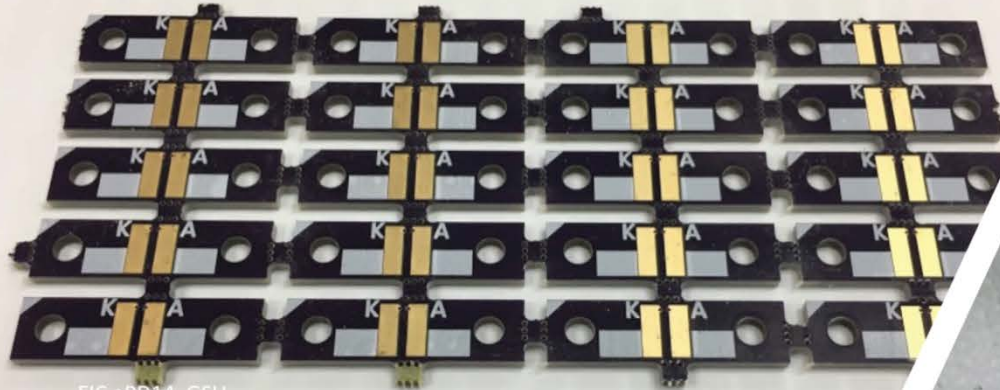


H13700 Dimension

# 2<sup>nd</sup> Iteration Hodoscope (prev wiring)



SiPM is soldered on the back side of the PCB. No preamp!



EIC eRD14, GSU



Hamamatsu  
S13360-1350PE

- Concern about wiring
- Biased towards using the Caen doo-dad
- Counter-proposal

# Scheduling

- **Big push also on the MA-PMT readout**
  - DC routing density
  - First test articles
- **Manpower plan**
  - GSU grad student William Roh will visit May 3 - 18
  - Complete hodoscope assembly/wiring and verification
  - **Bring working hodoscope back with him?**
- **Hopefully will be in debug for MA-PMT readout**
- **Firmware merge (KLM x2, BMD, HMB)**
- **PMT Carrier schematics in backup**