Each channel is powered by a power supply from a tower of Raspberry PI PCBs. Each PCB has two channels which can be controlled from a web server running on the PI.

Design issues toward June FNAL Beamtest

Gary Varner
Detector to be tested (Tommy, Emily working on)

- We constructed two mRICH holder boxes. One is for using Fresnel lens \((f = 6\,\text{”})\) and the other is using a spherical lens \((f = 8\,\text{”})\). 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.
Focus today on hodoscope readout

Hodoscope Design

The front and the rear hodoscopes are identical. Each has two finger-scintillator (20cm x 1cm x 1cm) planes (X-direction and Y direction).

- Bare minimum is 2 x 8 bars (10 cm coverage better?)
- Beam spot probably smaller
- Proposed design can handle up to 15
1st iteration

Hodoscope Connector Used in 1st Beam Test

Each channel is powered by a power supply from a tower of Raspberry PI PCBs. Each PCB has two channels which can be controlled from a web server running on the PI.

- Make compatible with TARGETX readout
- Not only desired upgrade(?)
Proposed 2\textsuperscript{nd} Iteration

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

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

Hamamatsu S13360-1350PE
Simplified wiring?

Instead of MPPCs, mount twisted pair (short) wires directly to board.
Moving forward with Rev 2 Scint Tracker

- USB for power
- Simplified trigger uses single RJ-45
- Full readout (HMB) uses two RJ-45

- Hard solder twisted pair to MPPC board
- 2-pin, keyed headers on PCB
FNAL Open issues?

- Make FMC card for Micro-Zed + Eval board?
- Have connectors to tie together for event-building

- 2x4 RJ-45 for all 4x hodoscope planes
- Dual vertical RJ-45 for cross-connect and trigger distribution (FTSW functionality)
- Ethernet for housekeeping
• 1x Micro-Zed per upper / lower pair
• 1x as FTSW equivalent module?
Scheduling

• Try to finish wiring this week (TX Tracker DR Monday?)
• Need big push also on the MA-PMT readout
  – DC routing density
  – Autoroute transition board
• Manpower plan
  – GSU grad student William Roh will visit early May
  – Complete assembly/wiring and verification
    – Bring working hodoscope back with him
• Hopefully will be in debug for MA-PMT readout
• Hodoscope to ship in advance (mechanics for both?)
• Additional manpower?