Update on MCP-PMT/LAPPD beam test at Fermilab

Junqi Xie, for

Teams: BNL, ANL, Stony Brook, GSU, FAMU, Howard Univ, Texas Southern, Incom

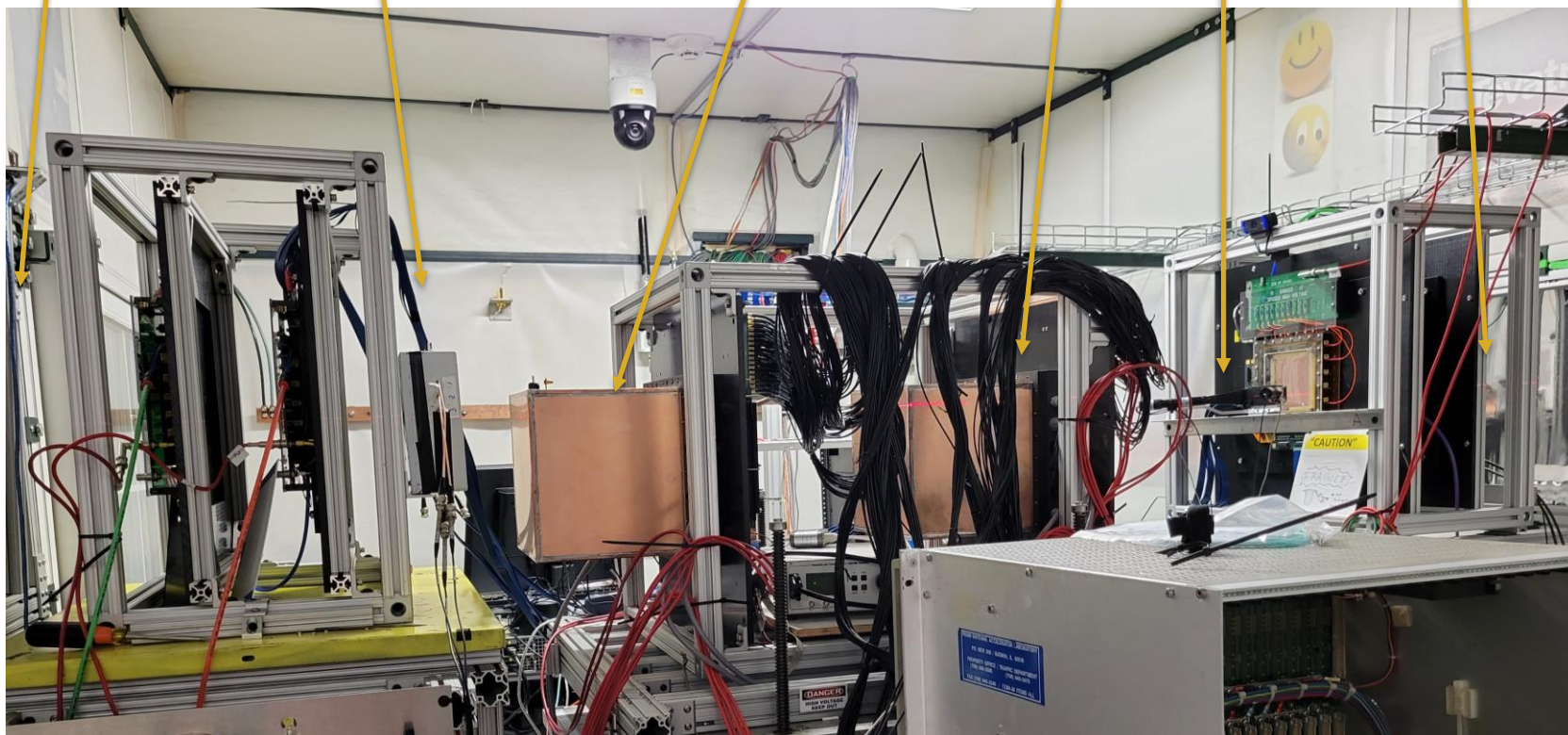Scintillator 1 (blocked)   10um pore size MCP-PMT   Pixel MCP-PMT   LAPPD   Scintillator 2   Planacon (blocked)

Time of flight

10 um pore size MCP-PMT was aligned with Planacon and scintillators at the same level. The two device signals were led into same readout module, avoid the synchronization issue we are facing with multi-modules.
With scintillators signal as trigger, planacon and MCP-PMT signals were recorded.

Planacon signal

10 um pore size MCP-PMT signals from two strips, four channels
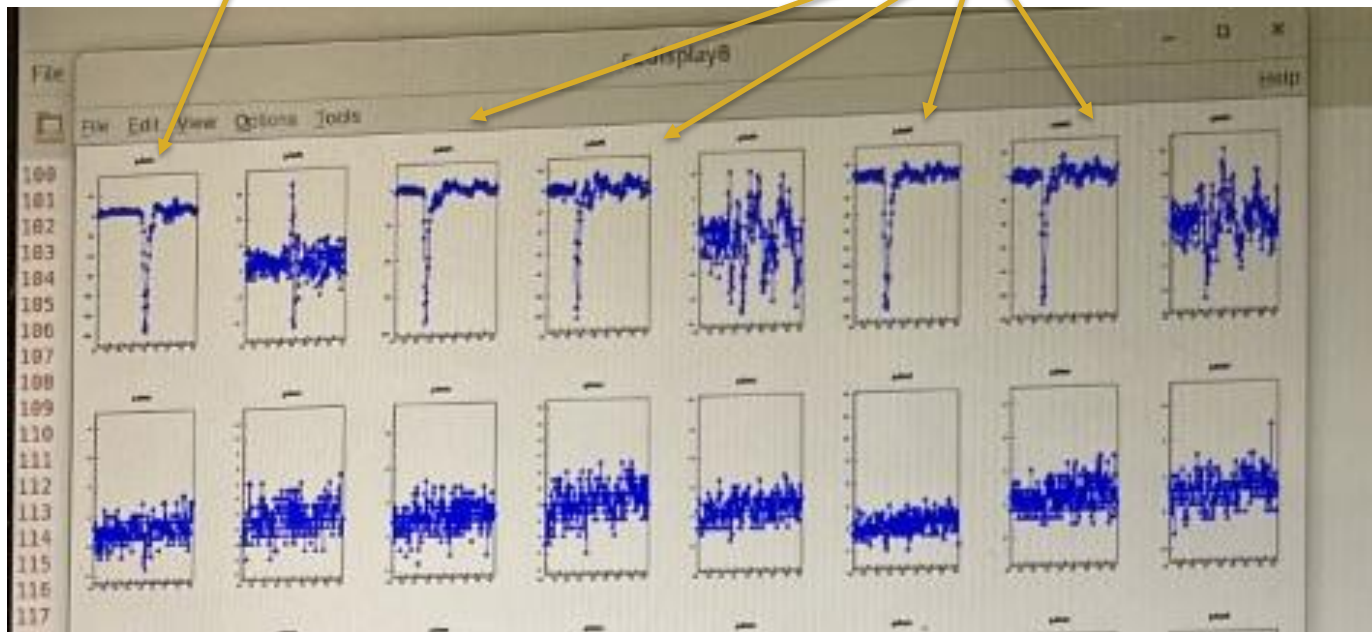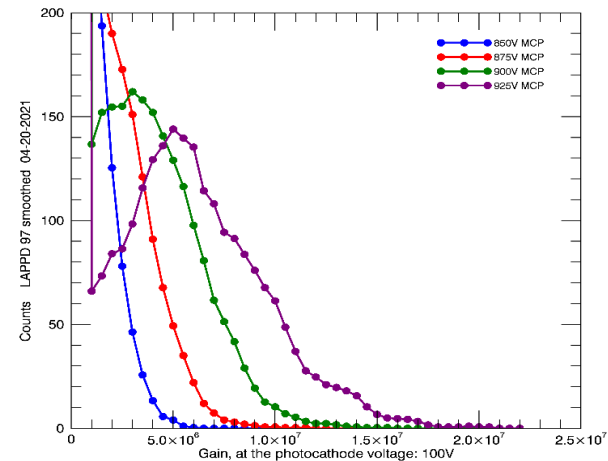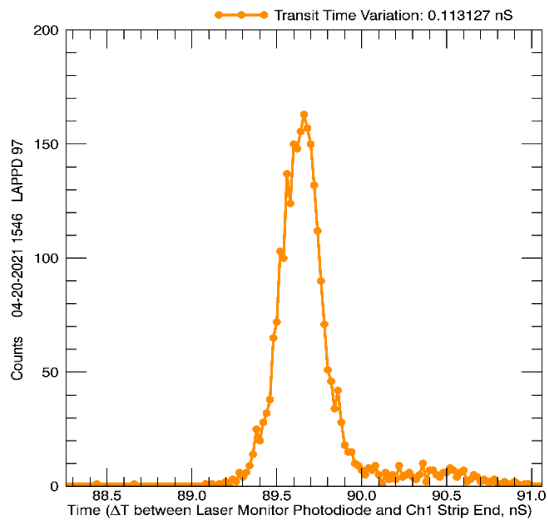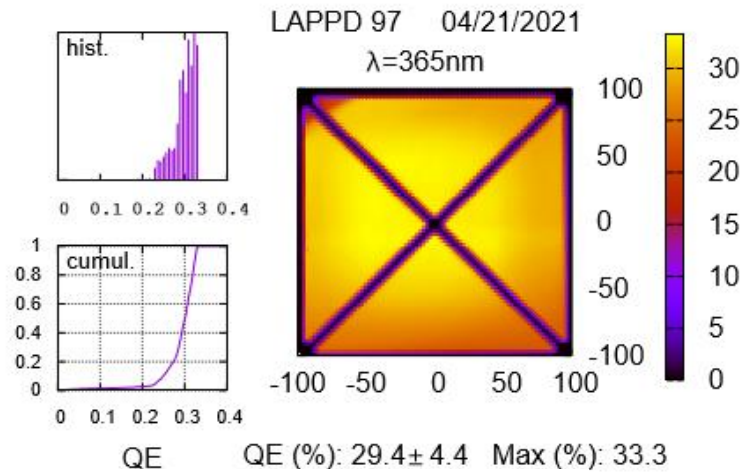
Pixel MCP-PMT with 10um pore size MCPs

The MCP-PMT was attached to the readout board with 3D printed holder. HVs lead out with feedthroughs.

With self-trigger, we were able to see weak signal on oscilloscope, but no signals were able to be picked up on the digitizer. Further bench test will be needed to identify the issue.
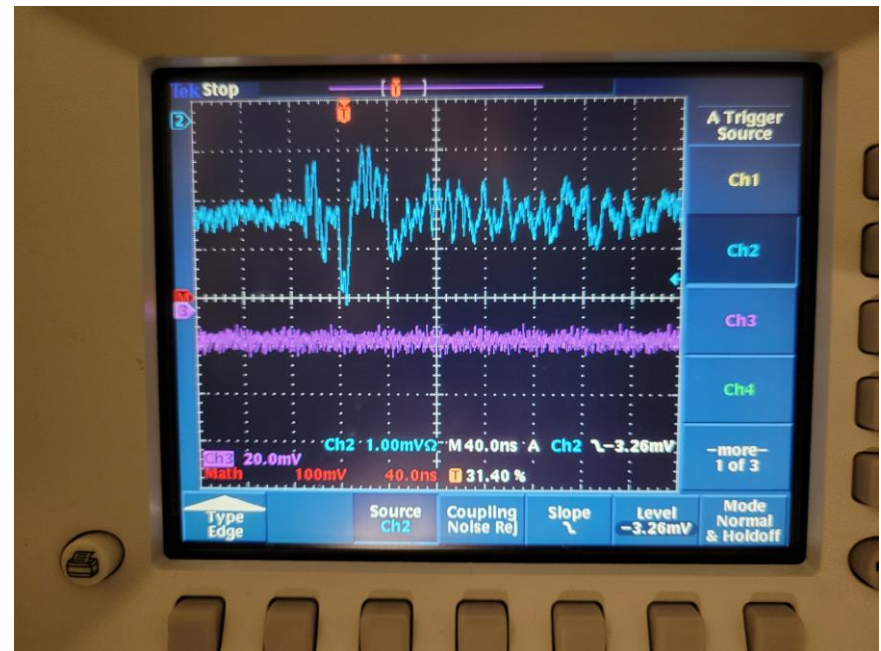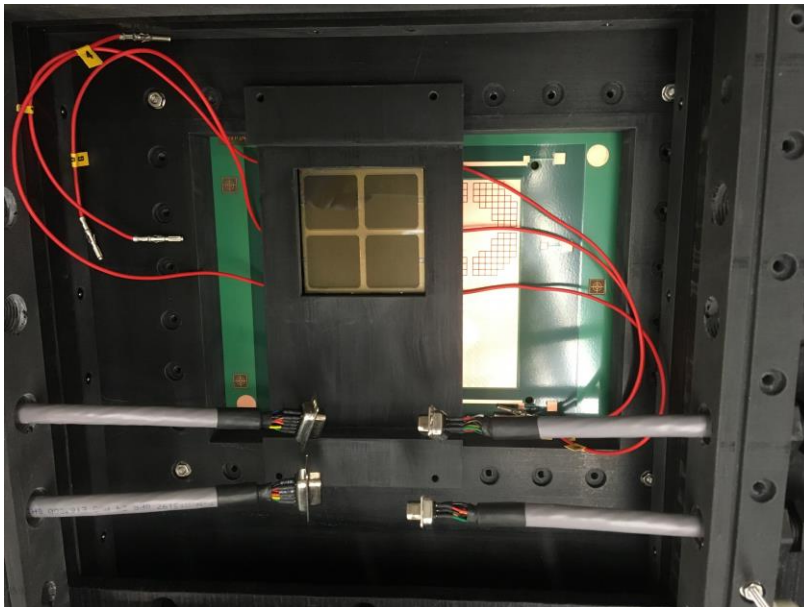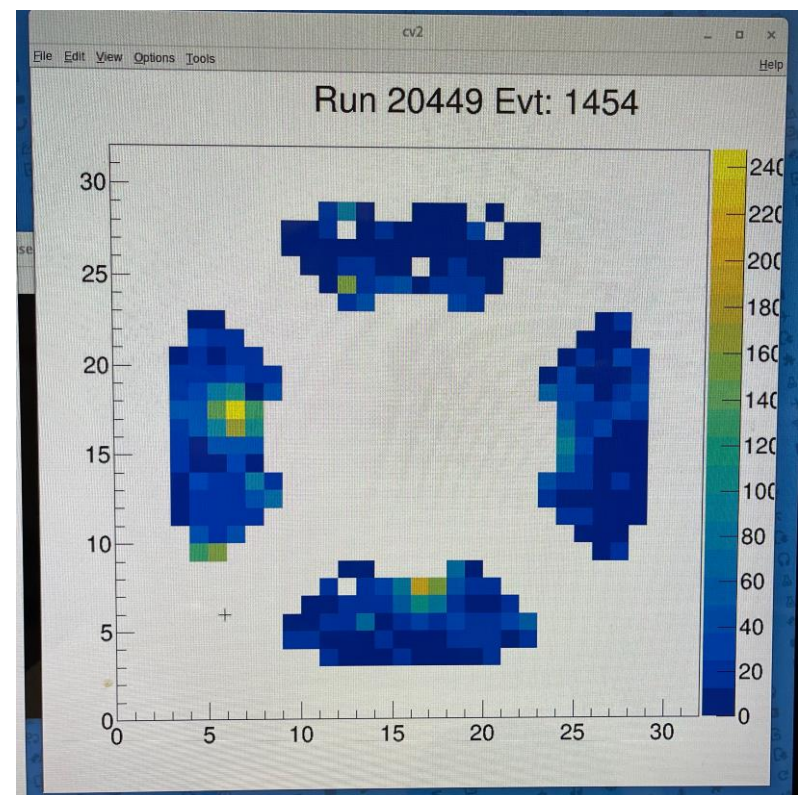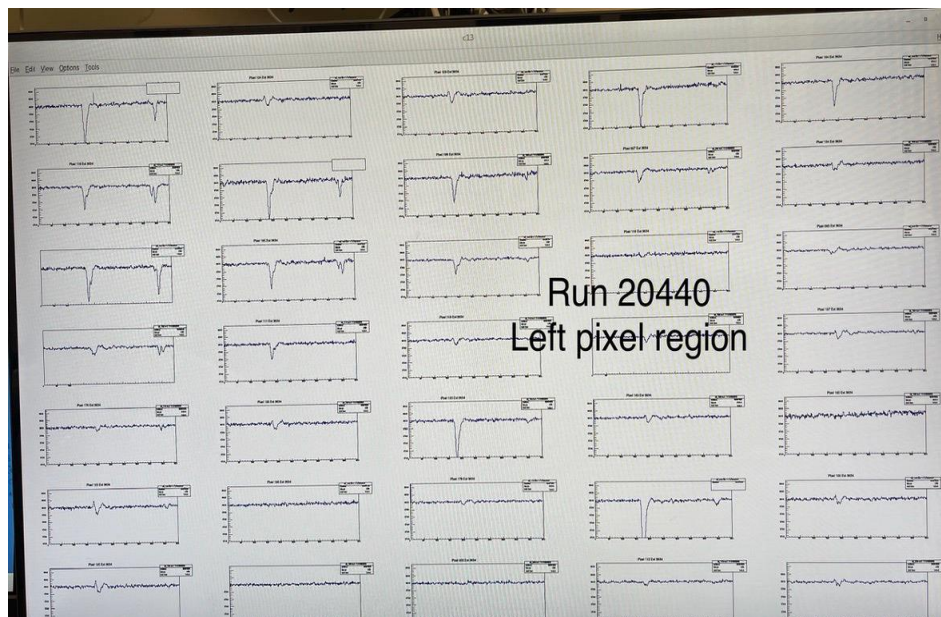
LAPPD bench test data

LAPPD #97 bench test data:

LAPPD beam test

Most experimental details have been reported by Xiaochun in last meeting.
Basically, we were able to detect single photoelectron event with LAPPD.
Data were taken with LAPPD for Cherenkov photons, but on-line monitor did not work quite well, further analysis is still on-going.

Run 20440
Left pixel region

Run 20449 Evt: 1454

Currently, the LAPPD is at BNL for more bench test and will be shipped back to Incom.
A data analysis meeting is to be organized, hope will speed up the data analysis.