Experimental setup in MT6.2C
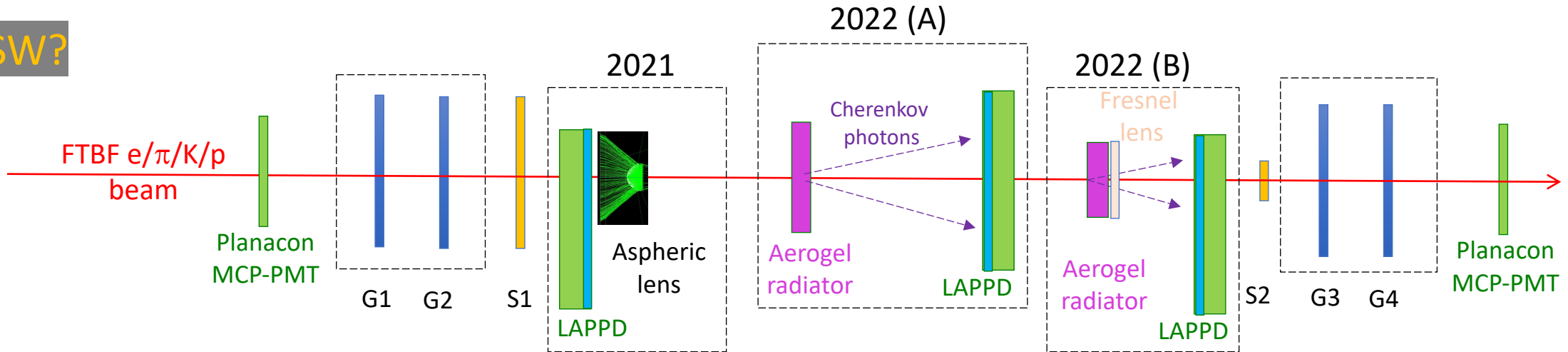

- Equipment shipped to Fermilab two days ago

- New readout boards: were ready on time

- RS232-based VETO logic verified in the DAQ

- DREAM (tracker) & DRS4 (digitizers) drivers seem to work fine in the same RCDAQ environment

- DRS4 offset / gain calibration data is taken

- DRS4 timing calibration data is taken as well, but we will start with the "standard" CAEN calibrations

- LAPPD tile production is of a certain concern
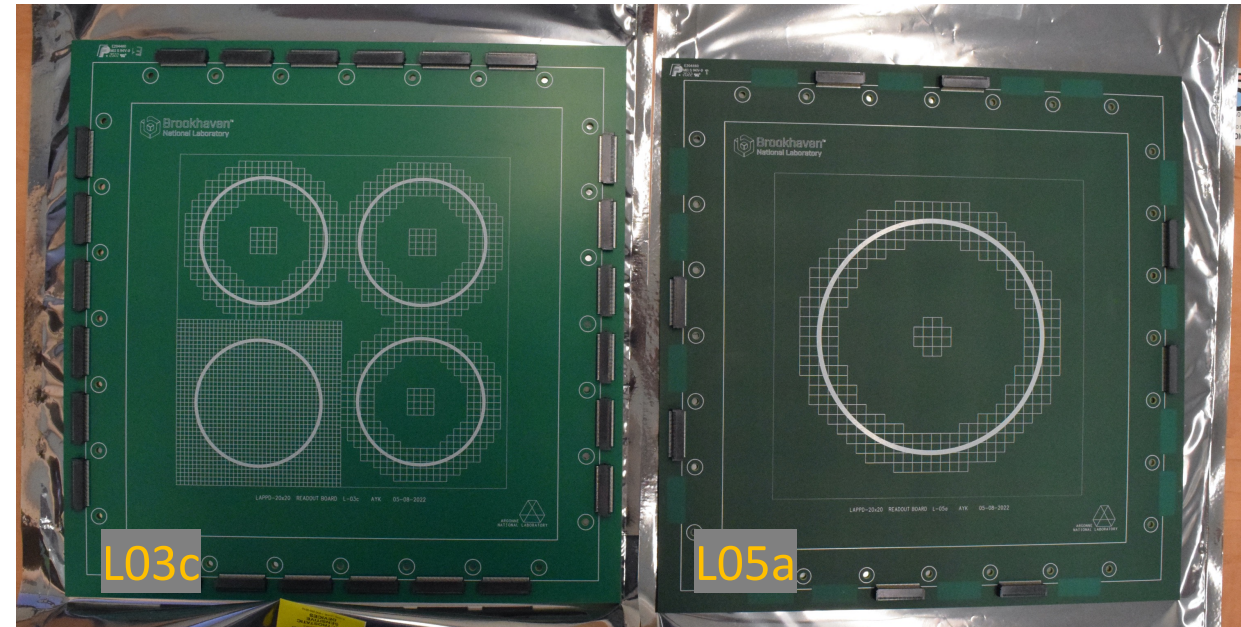
Measurement program: first week

Starting Monday June 13th

Installation and 120 GeV running with the (L02b) / L03c board and aspheric lens

Activity / milestone	
Trainings, badging, etc.	Monday - Tuesday
Operation readiness review	Tuesday late afternoon
DAQ & computing ready to go	by Wednesday evening
Tracker: beam profiles, etc.	Wednesday - Thursday
Planacon timing: t_2-t_1 event display	by Thursday evening
LAPPD installation	Wednesday - Thursday
The rest of the online / offline software	in a "useable state" by Friday
Beam line Cherenkov counters + DAQ	Some time during this first week
Aerogel "test station" setup & measurements	As long as it takes

LAPPD basic performance evaluation (Cherenkov imaging spatial resolution and timing resolution) in a 2021 setup: Friday - Sunday

Measurement program: second week

Starting Monday June 20th

Low energy running with the (L02b) / L03c / L05a boards and aerogel radiator

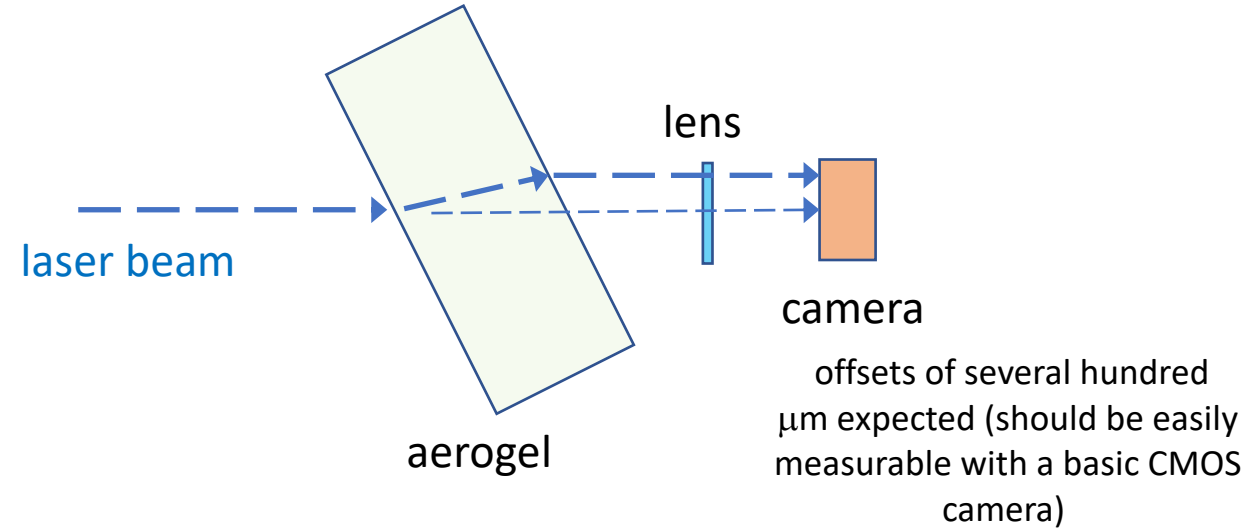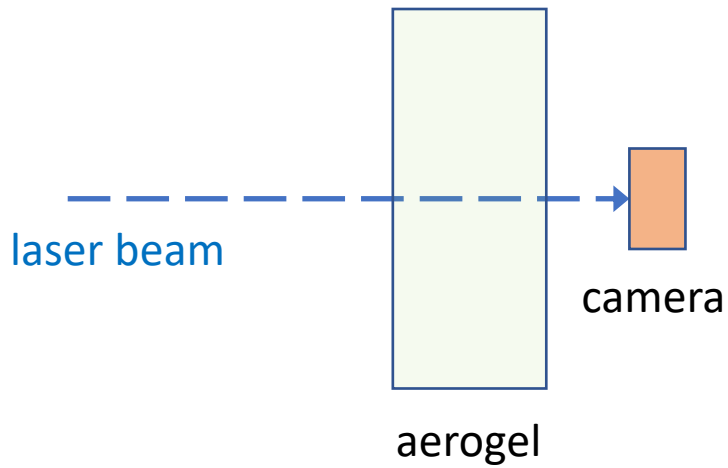| Activity / milestone |
| --- |
| Establish aerogel Cherenkov photon yield |
| Establish time-of-flight measurement |
| |
| mRICH configuration with a 7" FL Fresnel lens |
| pfRICH configuration (requires a switch to the L05a board) |

"Nominal" π/K separation evaluation in the 5..10 GeV/c momentum range

- Optionally:

  - e/π separation in the 2..3 GeV/c momentum range
  - mRICH XY-scan and angular scan
  - Try various types of aerogel
  - LAPPD "HV scan"

  - Compare two different LAPPDs
  - Try 2.5mm pad pattern of the L03c board
  - ..?

We can make use of the night shifts if we manage to staff them

Aerogel "test station" setup

laser beam

camera

aerogel

Case #1: find a good spot on a tile

laser beam

lens

camera

aerogel

offsets of several hundred µm expected (should be easily measurable with a basic CMOS camera)

Case #2: evaluate refractive index

- Basic optical equipment is available:
  - Breadboard, translation stages, rotation stage, ND filters, etc.
  - Focusing lens, if needed
- Class 1 or 2 laser ~400 nm
- CMOS camera (see a sample image quality on the right)

~77µm

~77µm