My inputs for the Test Beam

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4/10/2022

General organization

- let's have a meeting every day in zoom at 14.00 (on 5/10 at 18.00)

  zoom link:
  https://cern.zoom.us/j/9374314394?pwd=YTFjZjFGcXptMG13cGFQYWFQOWdrZz09

  2. When needed, I can be reached at my cell phone: +39 366 680 5990.
  In this way, we can organize extra zoom meetings, whenever needed.

- Write everything in the **electronics log-book**
  (https://new.cernbox.cern.ch/s/LhtHmuvRLlraYbU), also copying here
  relevant pictures, plots, …

GOALS of the TEST BEAM

1. Measure the time resolution of the single photoelectrons respect to
   - The small MCP
   - Relative among the different photoelectrons of a same ring
2. Measure the time resolution of the beam signal generated in the LAPPD
   - Respect to the small MCP

IMPORTANT: these measurements have to be performed varying the following electric biases (varying one at the time):

- Voltage between photocathode and first MCP layer in LAPPD
- Voltage across the two MCP layers in LAPPD (moved together, to make it simpler)
- Voltage between the last MCP layer in LAPPD and the anode

GOALS of the TEST BEAM, cont.

When and if goals 1 and 2 are satisfactory accomplished

- Satisfactory = data collected and small samples of these data analyzed to prove that the data are good and meaningful

Then we can try to use Alexander's pad board to see the effect on time resolution of using smaller pad size

Using our 32 read-out channels

The red circle indicates where we would like to have the beam
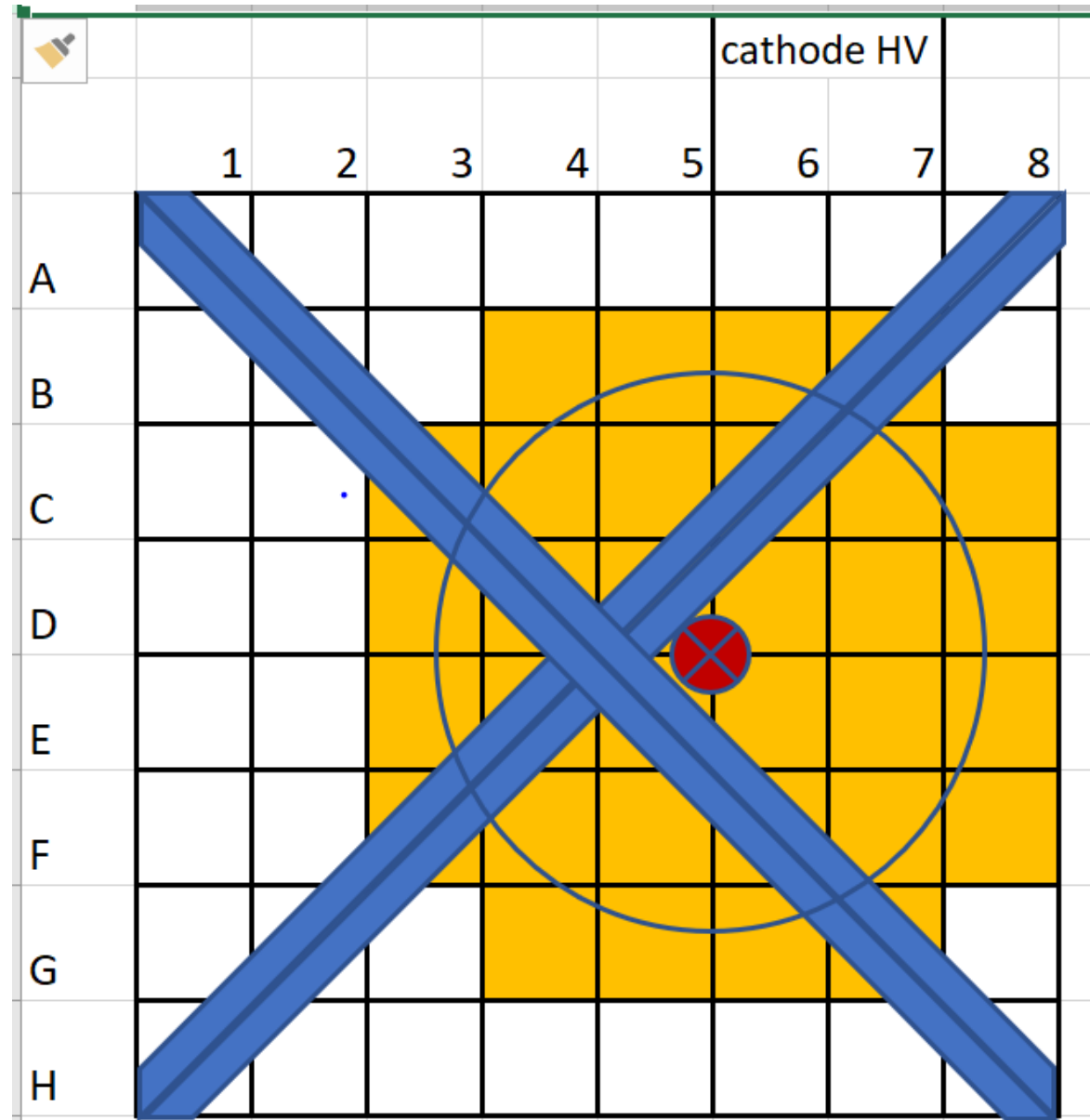
First steps with the beam

- align the detector with the nominal beam line <u>without the lens radiator</u>;
  - verify the alignment checking the beam spot in the LAPPD;
  - correct the position (if needed)
- put in place
  - (i) the radiator lens at 60 mm (according to Misha's simulations 60 mm indicates the centre along z of the lens),
  - (ii) the beam counter and
  - (iii) the small MCP that measures the beam time
- start the first data taking and analyze immediately a first subset of data; the goal of this analysis is to plot
  - a) the time difference between the small MCP and the beam signal in LAPPD,
  - b) the time difference between the small MCP and the photons in the ring
  - c) The time difference among the photons of a same ring