

Re: TOF high voltage scan

Subject: Re: TOF high voltage scan

From: Alexander Ostrovidov <ostrov@hadron.physics.fsu.edu>

Date: 01/25/2016 01:19 PM

To: Alexandre Deur <deurpam@jlab.org>

CC: Alexander Ostrovidov <ostrov@jlab.org>, Mark Ito <marki@jlab.org>, Paul Eugenio <eugenio@fsu.edu>

Alexandre,

I think TOF HV scan should be done later in the run, not when the beam is restored. The goal of the HV scan is to measure TOF efficiency and to find the lowest HV setting at which we are still reliably close to 100% eff. and, at the same time, extend the PMT longevity by running at the lowest acceptable HV.

Now, to determine TOF efficiency we need to have good working track reconstruction. Which means that the drift chambers should be in their optimal state and, preferably, their calibration should be done already. I can only guess that this will happen 2-4 weeks into the run at best. Also, I do not like the idea of combining this scan with HV scan of CDC, FDC or ST (other detectors may be fine). Their scans may affect tracking in some unpredictable way and complicate the interpretation of the observed TOF efficiency change.

In terms of the required time, I'm thinking about 6 back-to back runs with a stable beam and tracking:

- 1) TOF HV at their current nominal values
- 2) +25V for all HV;
- 3) -25V
- 4) -50V
- 5) -75V
- 6) -100V

I guess, 1 million events per run should give us enough coverage over the TOF face. I cannot predict the DAQ rate. If it's about 1kHz then each run should take about 20 minutes. Together with delays to change HV and start a new run the study should be done in 2,5-3 hours of beam time. Also, if we are in the production mode, most of these runs should still be acceptable for production except for the last ones where we may start seeing a drop in the efficiencies.

Sasha

On Monday, January 25, 2016, Alexandre Deur wrote:

Hello Sacha,

Re: TOF high voltage scan

Do you need to do TOF high voltage scan once the beam is restored? If so, could you send me any specific requirements and how long it will take? Is that something you can do in parallel with other HV scans (there are 4h of HV planned for the CDC)?

Thank you,

Alexandre