



LAPPD – ATTIVITA' INFN News

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TEST BEAM (OCT. 2022)

- Analysis well advanced (mainly Misha)
- Missing, even if in the pipeline
 - Digitizer time calibration (conceptually complex, new measurements in TS)
 - Cross-check of the amplitude in different channels (now possible; the adequate power supply delivered last week)
- Drafting a manuscript, initiated

More lab exercises planned with LAPPD

- GE is producing a small-size pad read-out plane
 - To be tested for general characterization and space resolution
- The LAPPD presently in Trieste will be shipped back by June

Motorized XYZ System

- Money anticipated in 2022
- Rushing to purchase the “right” device
 - 4 offers acquired
 - Selected: Zaber Technologies, x (200 mm), y (150 mm), z (50 mm)
- System received (Jan. 2023)
- Software ready (key help from Benigno Gobbo) to control the movement in linux environment → it can be integrated with digitizer read-out (tests already performed by Deb)

LAPPD in magnetic field (1/2)

- Which magnet?
 - DESY : max 1 T
 - CERN: no large aperture magnet available (a part beam lines)
 - Padova hospital option (Vagnoni et al.) doable also for us ? Misha is in contact
- Recent exercise at Argon; up to 2 T
 - Exercise by INCOM + ANL not prepared with enough care
 - Preliminary (only by on-line data at the scope)
 - Fine at 1.5 T up to angles of ~ 20 degrees
 - Fine at 0.5 T at almost all angles
 - Fine data analysis to be done; Deb contributing
 - My view: these data will not be exhaustive

LAPPD in magnetic field (2/2)

- Which sensor?
 - The new reference is HRPPD ($10 \times 10 \text{ cm}^2$) with DC-DC coupling
 - **No** DC-DC coupled HRPPD available for us till Autumn
 - Trying to get a with capacitive coupling HRPPD by April, to be confirmed (?)
- The device to be tested in magnetic field should be equipped and characterized in lab to have a fruitful campaign in magnetic field
 - Extremely difficult to define a realistic timelines

Visit at INCOM (Jan. 2023)

- My view
 - They have the technical capability to do the job
 - They need to see some money flow to speed-up in finalizing the HRPPD for ePIC
 - They are defining the engineering aspects in strict collaboration BNL (mainly Alexander)
- In production phase, they can produce 100 pieces/y
 - Yield not yet known
 - Needed for ePIC (backward RICH and DIRC) < 200 pieces → production in ~ 2 y
- Key to success/failure is to place in short time the order of a small series (~5 pieces) by the Project; this can link them to continue up to the end

Complementary to LAPPD R&D (1/2)

- Designing the pfRICH
 - Consultancy contribution by Silvia
 - By product: direct links with INCOM and following the development of HRPPD
 - Simulations by Chandra
 - By product: important steps forward of the reconstruction software (which is in common with dRICH):
 - now processing multiparticle events performed (before: only single particles)
 - χ^2 -based PID developed
 - e- π separation, calculations by Misha
 - Design and cost estimates of LV power supply system by Saverio

Complementary to LAPPD R&D (2/2)

- 3rd LAPPD workshop:
- - April 20, 2023 10am - 3pm EDT
 - Virtual format (as for the previous ones)