

T9 TESTBEAM OVERVIEW





PS: Mai 2015



Jochen Schwiening, Mar 2015



T9 TESTBEAM OVERVIEW



Common target in East Hall

primary 24 GeV/c proton beam from PS ($2*10^{11}$ per pulse)

45.6 sec PS "super-cycle"

nominal: 1 spill (~0.4 sec) to T9 for each PS super-cycle (asked for at least 2 spills, to be decided)

T9: 1.5 - 10 (15?) GeV/c

secondary target selects beam composition (electron-rich or hadron-rich) target is common to East Hall North experiments, needs to be negotiated in user meeting asked for hadron-rich target – did not work well in 2014, EA crew will try to fix alignment before our run,

we may have to invest one shift into target alignment if work in April is not successful

T9 controls own momentum, polarity, and focus of secondary beam via computer

convenient access to setup, about 10 sec for beam stopper, user responsible for search

(new rules for 2015? will investigate)

Beam instrumentation

scintillator for beam intensity

wire chamber for monitoring x/y profile at exit beampipe

Cherenkov threshold counter (CO₂, Air) [Giessen group expertise]









T9 TESTBEAM OVERVIEW 2011/12







Jochen Schwiening, Mar 2015



T9 TESTBEAM OVERVIEW 2011/12



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In 2011 CERN provided remote controlled tables (XSCA & DESY table) per request.





BARREL DIRC GOALS



Barrel DIRC test beam goals

Evaluate PID performance of plate and bar/lens designs with prism expansion volume.

"Proto 4" – expansion volume: large fused silica prism, bar or plate attached with or without focusing, readout using 3x5 MCP-PMT array, PADIWA/TRB3 readout.

Measure photon yield and single photon Cherenkov angle resolution fine angle scans, high-mom beam (remote controlled rotation of proto) Measure track Cherenkov angle resolution.

Evaluate PID performance for lower momenta to simulate pi/K Cherenkov angle difference using pi/proton (use tag from MCP-TOF and gas Cherenkov)

Demonstrate time-based imaging reconstruction approach for plate and bar.

(Both time-based likelihoods and photon yield measurement need improved readout electronics.)









- DAQ using PADIWA/TRBv3 to write hld files, unpacker software to convert to ROOT trees, calibrate, convert to analysis trees, interactive analysis GUI (mdisplay, tdisplay, etc).
- Configuration as in 2014 updated PADIWA components and TRB firmware (more channels per TRB).
- Updated readout box, added active ventilation, improved grounding.
- Updated MCP-PMT / PADIWA holders and new holder for 1" 8x8 MaPMT for possible special runs at end.
- Baseline plan is to keep Disc DAQ and Barrel DAQ separate to avoid complications.
- Need 15 MCP-PMTs for prism readout, 15 are in hand at GSI but need a few loaners from Mainz as fallback solution in case of PMT problems.
- Barrel setup will be transported by truck via France to CERN Prevessin, internal transport to Meyrin.
- 4 persons from GSI (Andreas, Carsten, Marvin, JS) will be at CERN the whole time (except for 4 week break),
 1-2 additional GSI persons could come to CERN for night shifts, 7-10 days at a time.
 Michael Traxler for one week at the start, Greg (now ODU) probably for two weeks in May.
 Data analysis team at GSI, daily phone/SeeVogh meetings planned to coordinate efforts.
- Main discussion points for today: space/beam requirements, manpower, scheduling, logistics. Schedule one more (SeeVogh?) meeting in April to discuss the test beam plans?





TESTBEAM PLANNING



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