

# Preparation status of beamline detectors and works on FSY2009 (2)

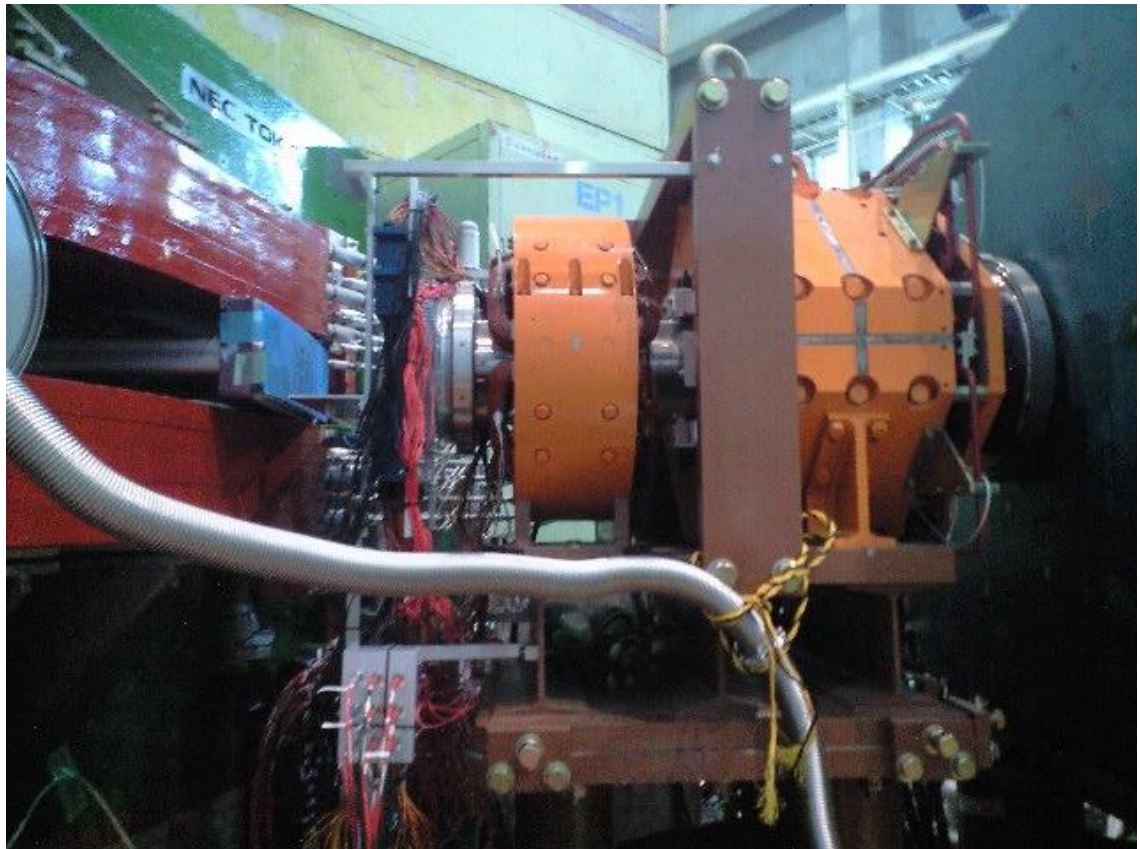
1. Beamline hodscope
2. PDC/PA
3. BLC/T0
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5. D5 Helium bag/Gaussmeter
6. TOFstop
7. Degradars/Range stack
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**K1.8BR beamline detector group  
for J-PARC E15/E17 collaboration**

# 1. Beamline Hodscope

- ◆ Holder: Finalized.
- ◆ Establishment: Completed on May 13th.
- ◆ Booster: Completed on May 14th.
- ◆ Working: waiting for the analysis of cosmic ray run.

**WSD holder is equipped  
at the upstream  
(up to 12cm thick).**



## 2. PDC/PA

- ◆ PDC: PDC2 has been remounted on April 3. Signal check was completed successfully, and analysis of cosmic ray data for position resolution.
- ◆ PA: No gain variation under on-off of 1.1 GeV/c field setting.  
Booster: works completed.  
Resolution: waiting for analysis of cosmic ray run.

# 3. BLC/T0

- ◆ BLC: Waiting for the analysis of cosmic ray data for the resolution.
- ◆ T0: Waiting for cosmic ray data analysis for resolution. T0 booster work was completed.
- ◆ Holder: Both are mounted and fixed on E15/E17 beamline holder. The beamline holder will be fixed after Helium bag installation into D5, and before TOF measurement.

# 4. Cherenkov Counters

- ◆ GC: The proper working was confirmed in run22. Tiny effect by D5 fringing field. Magnetic shield will be considered.
- ◆ AC: Does not work at proper position by the D5 fringing field. Magnetic shield design is completed.
- ◆ WC: Does not work at proper position by the D5 fringing field. Magnetic shield is under design.
- ◆ LC-I: No operational check. Magnetic shield design is completed and now under production.
- ◆ LC-II: Used counter for E471/E549. Magnetic shield design is completed and now under production.

Remeasurement of D5 fringing field at proper positions was performed on May 14<sup>th</sup>. The fringing field strength was 10~30 G ( $B_y$ ), for which magnetic shield is definitely required.

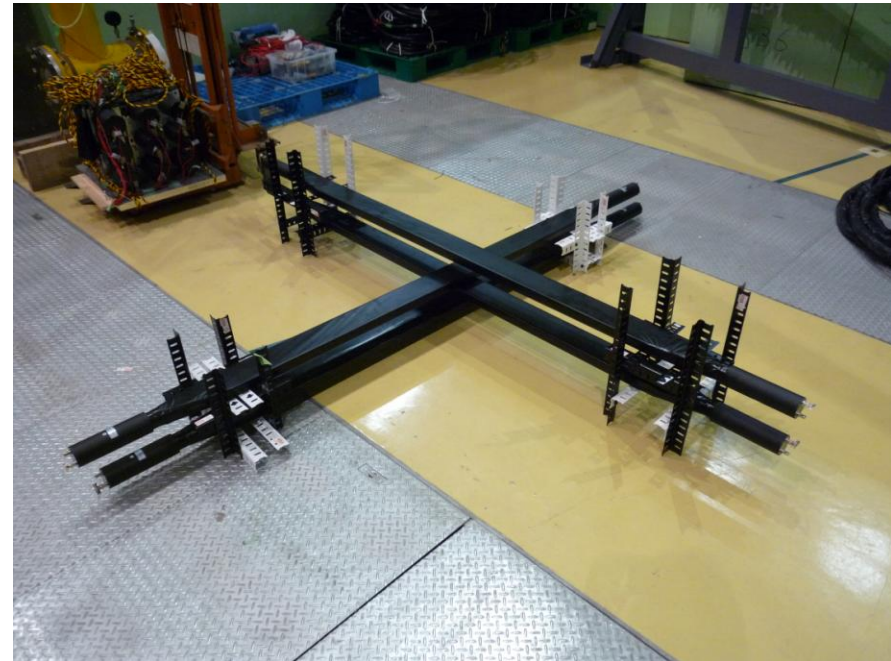
The effect of magnetic shield will be examined in the middle of this June for 1.1GeV/c D5 setting.

# 5. Helium Bag/Gauss meter for D5

- ◆ Helium bag: Not designed yet. During this summer, it will be installed from D5 downstream.
- ◆ Gauss meter: [Delivered on May 22th \(Lakeshore 475\)](#). At the installation of Helium bag, the probe will be installed together with it. Read-out scheme should be considered.

# 6. TOFstop

- ◆ Counter : Operational test (cosmic ray measurement of attenuation length and time resolution) is ready to start.
- ◆ Construction : ASAP after the operational test.
- ◆ Establishment : Holder is established on May 27<sup>th</sup> (at L=16.0m from FF).
- ◆ Peripheral devices : NIM circuits are secured. TKO QDC(T004) and TDC(RPT-140) was reinforced. LEMO cables were delivered on April 16, and all BNC/HV cables are ready, and HV supply (CAEN SY403) has been reinforced and secured. All cables were connected to the proper position, and all peripheral devices are successfully constructed and completed including all checks.



# 7. Degraders/Range counters

- ◆ Degrader: Selection/purchase after yield calculation. At the moment, combination of carbon and heavy metal is considered (ratio/material will be decided after yield estimation). E549 degraders will be reused.
- ◆ WSD: Decision (of placement) and production after the yield calculation. It will be set at the upper-stream of BHD.
- ◆ Range counters: PMT glue and check for light leakage is in progress. HV distributor box exists for booster.
- ◆ Holder: Ready (Reuse the one used for E471 as it is). No further care is needed to fix it on downstream beamline holder.



# 8. Small DC/E0

- ◆ Small DC: **Test is finished in FSY2008**. Waiting for the cosmic ray data analysis for resolution. **All 128ch are ready including the electronics.**
- ◆ E0(segmented scintillator to measure the energy loss just in front of the target): Under design. H6152-01B will be adopted, considering the linearity for energy deposit measurement, TOF resolution, and operation in magnetic field up to 1.0T. We need more ~200 Myen for 6(used)+1(spare) PMT's.
- ◆ Holder: Holder of Main Degrader + E0 + Small DC inside the CDC is required, but not designed yet.

# 9. Simulation Studies/Peripheral Equipments

- ◆ Trigger scheme for beam tune: finalized (see, the last page).
- ◆ Test for 2nd level trigger (Fast Clear): From this June (after the preset scaler repair).
- ◆ Electronics: SMP-SCH system with 3 TKO crates, which are necessary and sufficient, are properly working. 4 spare SMP exist. Except for these, CDS and SDD group hold 4/1 of working SMP. Dr T II SKStype for PDC(16)+BLC(16)+Small DC(4) are secured and all channels were checked.
- ◆ HR TDC/Charge ADC : For TOFstop, we additionally need 4+2. Tested successfully including those used Neutron/Proton arms, and already set on proper slots.
- ◆ NIM circuit : NIM visual scaler system is completed. Time calibrators were repaired. Preset scalers will be repaired until the end of this May. All other circuits are ready and enough to complete the beam tune, E17, and even E15.
- ◆ Online analysis: prepared by the necessary and sufficient level.
- ◆ HV supply: 4 CAEN SY403 crates were found at K5, and all PMT's can be cared. Positive HV for E0 can be cared by SY127. 2ch\*5 module of HV supply for DC are ready. 1 spare crate is being repaired.
- ◆ Assignment of cables:Completed.
- ◆ Scheme of the TOF measurement (measurement of central momentum/transfer matrix) : Monte-Carlo study is ongoing. It will be finished by this summer.
- ◆ Yield study of stopped K (related to WSD/Main Degradar):Monte-Carlo study will be started on FSY2009.