Sep. 24, 2009

Preparation status of beamline detectors and works on FSY2009 (6)

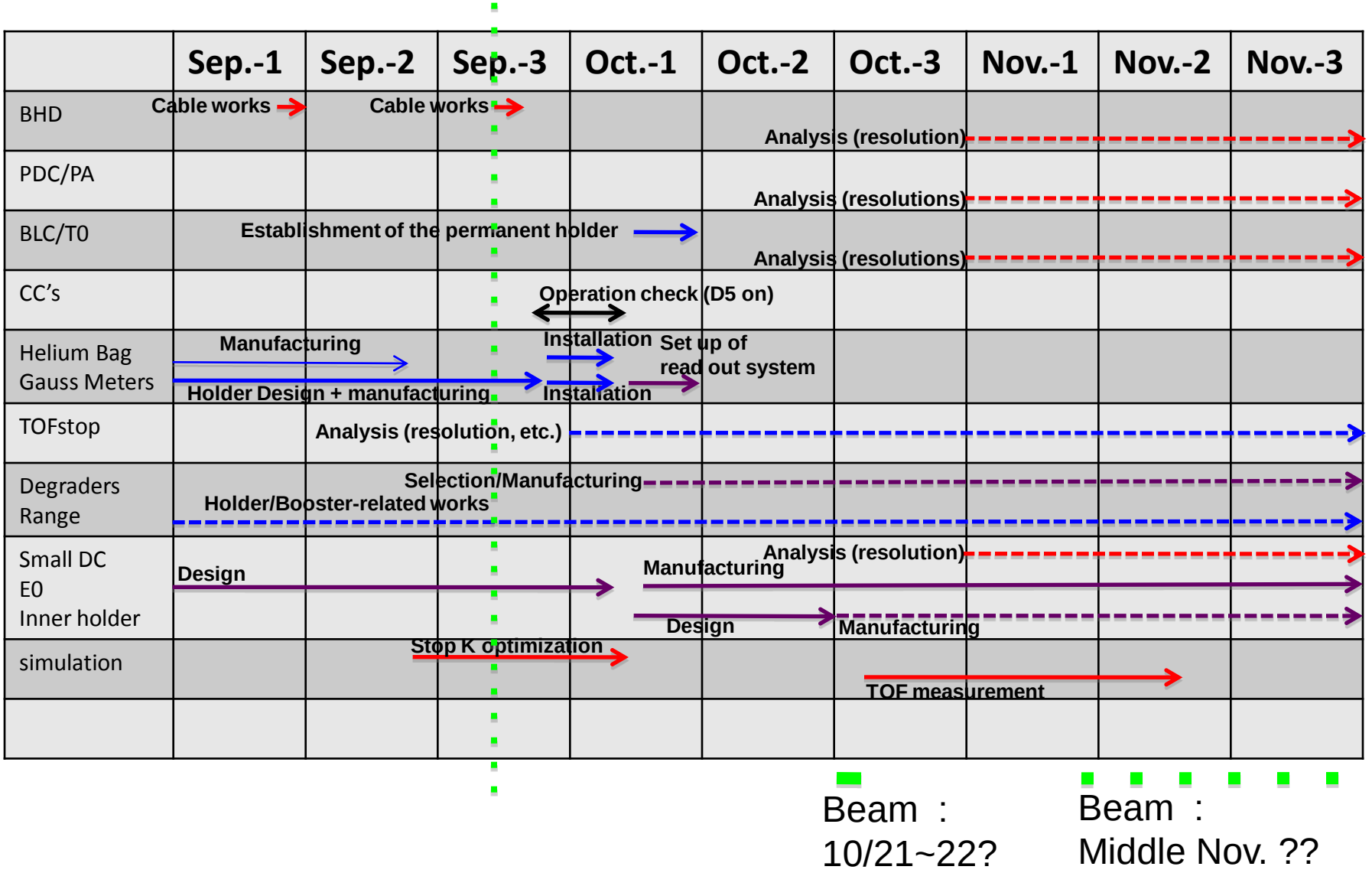
1. Beamline hodscope
2. PDC/PA
3. BLC/T0
4. Cherenkov counters
5. D5 Helium bag/Gaussmeter
6. TOFstop
7. Degraders/Range stack
8. Small DC/E0
9. Simulation study/peripheral equipments

K1.8BR beamline detector group
for J-PARC E15/E17 collaboration

0. Time Table (middle term)

Responsible persons

Blue: H. Outa / H. Kou Red: T. Suzuki Purple: T. Hashimoto

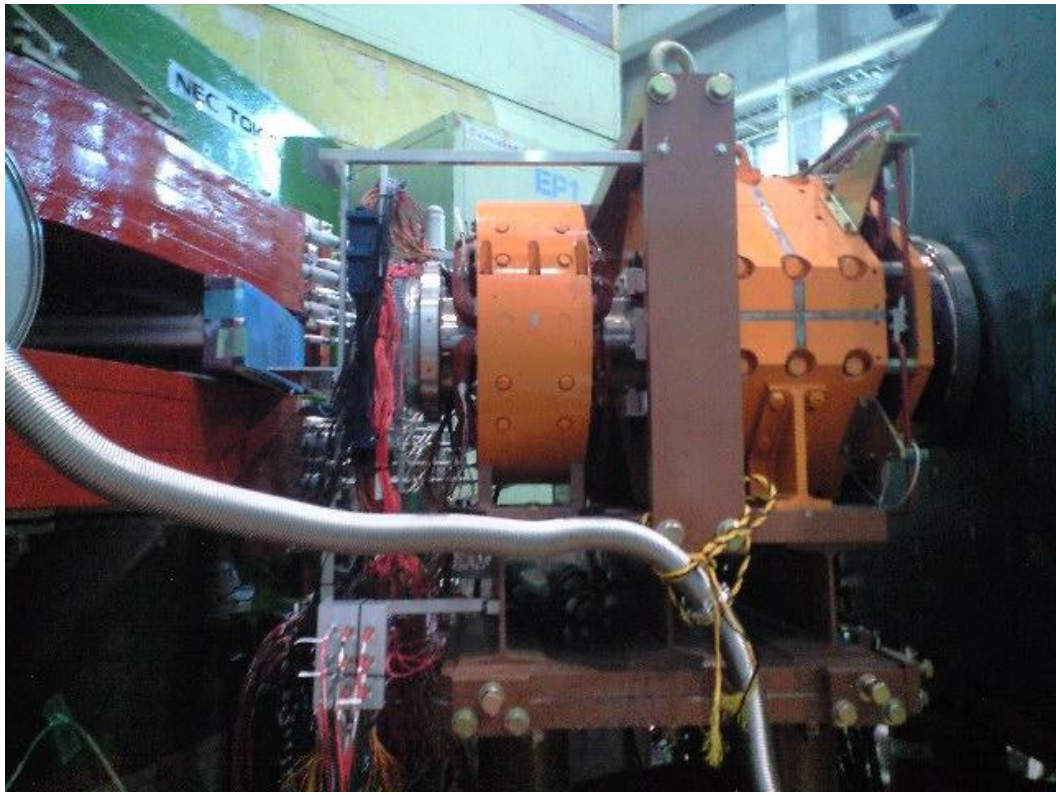


1. Beamline Hodscope

Working: waiting for the analysis of cosmic ray run.

- Raw signal cables must be extended, and data lines must be rearranged (Minimum BNC length was measured on Sep. 8th).
- The cabling work will be done on 25th, with 5 bundles of 7m*8 BNC cables delivered on Sep. 18th.

WSD holder was 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 holer. The beamline holder will be fixed after Helium bag installation into D5, from 5th of this October before beam delivery.

4. Cherenkov Counters

The effect of magnetic shield was once examined in June 16~17th for ~1.1GeV/c D5 setting (1800 A) for AC and WC. From the week starts Sep. 28, we will examine LC-I/LC-II.

- GC: The proper working was confirmed in run22. Tiny effect by D5 fringing field. Magnetic shield is not considered.
- AC: Does not work at proper position by the D5 fringing field. Magnetic shield (T=1.6 mm permalloy C box) was equipped, and the proper work was confirmed on June 17th.
- WC: Does not work at proper position by the D5 fringing field. Magnetic shield (T=1.6 mm permalloy C box) was equipped, and the proper work was confirmed on June 17th.
- LC-I: No operational check. Magnetic shield (T=1.6 mm permalloy C box) was equipped, and operational test will be done on October before the beam.
- LC-II: Used counter for E471/E549. Magnetic shield was equipped (T=1.6 mm permalloy C box) , and operational test will be done on October before the beam..

5. Helium Bag/Gauss meter for D5

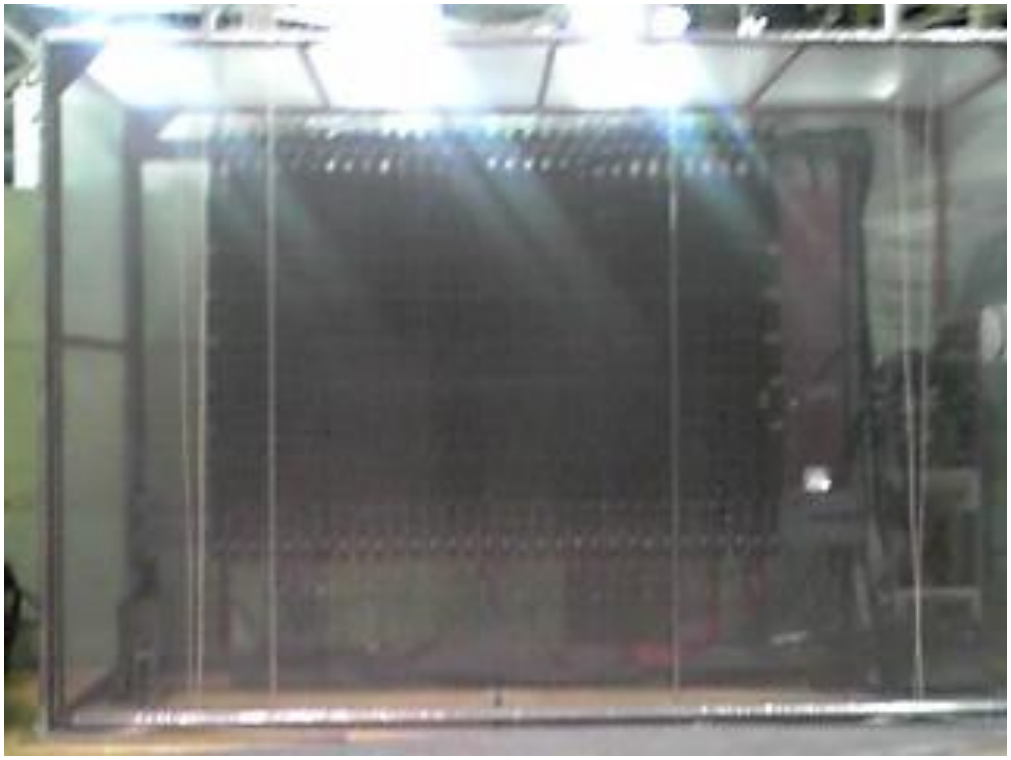
- Helium bag: Delivered on Sep. 18th (**by H. Kou => H. Kou's report**). It will be installed from D5 downstream, from the Sep. 28th .
- Gauss meter: At the installation of Helium bag, the probe will be installed with a specific holder designed by H. Kou. Read-out system is now under construction by T. Hashimoto and it will be completed by Oct. 9^{th} .

6. TOFstop

- Counter : Operational test (cosmic ray measurement of attenuation length and time resolution, ^{90}Sr source measurement) was completed on June 9th.

-> another report.

- Construction : completed on June 6th.
- Establishment : Holder is established on May 27th (at L=16.0m from FF).
- Peripheral devices :All ready. A tent house is build on July 24th.



7. Degraders/Range counters

- Degrader: Selection 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 was completed. HV distributer box exists for booster. Boostre cables were prepared. Magnetic shield was equipped.

  Booster-cable connection to the booster box will be done AFTER the placement on the holder.
- Holder: Re-designed and completed by H.Kou. Now at the K1.8BR.

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. EJ230(=BC420) scintillator was delivered on July 1st. H6152-01B PMT was delivered on Aug. 26th. Light guide should be considered well not to lose photons by its bended-shape, and the design is underway by T. Hashimoto (-> see, his report). E0 holder on Small DC frame is under design.
- Inner holder: Holder of Main Degrader + E0 + Small DC inside the CDS is required, but not designed yet. It will be designed after the the design of degraders and E0.

9. Simulation Studies/Peripheral Equipments

- Trigger scheme for beam tune: finalized.
- Test for 2nd level trigger (Accept/Reject): Done->another report.
- Electronics: SMP-SCH system with 3 TKO carates, 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 Neuton/Proton arms, and already set on proper slots.
- NIM circuit : NIM visual scaler system is completed. Time calibrators were repaired. Preset scalers were repaired. 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 SY403 crate exists.
- Assignment of cables : Completed.
- Scheme of the TOF measurement (measurement of central momentum/transfer matrix) : Monte-Carlo study is ongoing. It will be finished within this November.
- Yield study of stopped K (related to WSD/Main Degrader) : Monte-Carlo study was started and will be finalized soon.