

Welcome and Mandate

1. Mid term plan
 - Accelerator upgrade
 - Hadron hall
2. Beam time allocation till June

March 16, 2012

K. Nishikawa

Issues from last PAC meeting and mandate #1

1. the **accelerator upgrade** for the fast and slow extraction
2. the **plans for the hadron hall** and the muon facility
 - For the hadron hall, two major issues
 - 1)usage of the south area where a conflict between the K1.1, the high-p and COMET beamlines
 - 2) usage of the SKS and other magnets in the K1.8 and other beamlines. -> will report at PAC in July
 - the PAC encourages the lab to **survey the interest** in the high-energy and nuclear communities for the **physics to be performed in the high-p and K1.1(BR) beamlines** as well as in the new line **optimized for the COMET** experiment.

Possible flow of mid-term plan

- IPNS
 - Survey and discussion in particle and nuclear physics communities
 - Discussion with proponents
 - Presentation at J-PARC IAC
 - Presentation at J-PARC PAC
- IPNS proposal to KEK and MEXT
- Budget requests from KEK to MEXT

K1.1BR

P36 muon-electron in K_{l2} decay

- Reiteration of recommendation of stage-1 approval
- Conflict in space with COMET, high-p construction
- From PAC-11
 - Execution of the R&D program must advance before the proposed P36 schedule can be reviewed.
 - In preparation for this future review the PAC requests that a detailed plan of collaboration responsibilities for the construction of the necessary detector components be developed
- Many letters of interests from collaborators
- May have **time slot** before the start of construction of high-p, COMET phase-1

High p line

- E16 : the Committee requests an **update of the experimental status and theoretical developments** on vector-meson mass modifications in nuclei. The update should include a discussion of the international competition from future experimental programs around the world.
- Other **Physics cases** for high-p line
- First priority in the nuclear physics community
- RCNP proposal to co-host the facility

Participation of Research Center for Nuclear Physics (RCNP)

Based on

Agreement among RCNP, IPNS, and J-PARC on
Cooperation in Nuclear and Particle Physics

Signed APRIL, 2010

Collaboration among the User-based Laboratories
will promote:

- to open new research fields.
- to introduce new methods and techniques.
- to activate personal exchange and invite new users.

Participation of Research Center for Nuclear Physics

- A New Project has been germinated.
“Construction of a High-Resolution Charmed Particle Spectrometer at the High-Resolution, High-Momentum Beam Line” → K. Ozawa’s presentation.
- Next steps:
 - Proposal to RCNP PAC
 - Formation of Project team
 - Physics Proposal to J-PARC PAC
- Currently KEK has two visiting professors from RCNP.
- RCNP newly hires an Assistant Professor.

COMET

- The PAC considers the proposed mid-term plan as an important and indispensable step forward toward realization of the experiment and urges the collaboration to **develop a realistic schedule** for the experiment and
- looking forward to hearing about this **strategy** at the next meeting in order to evaluate the mid-term plan for the hadron hall.
- High priority in **high energy physics community** along with ILC, neutrino experiment
- Relative urgency with g-2 ?
 - closely related topics
 - readiness

Mid-term plan

- IPNS want to push
 - Accelerator upgrade with new power supply for
 - higher rep. rate for FX
 - small beam loss and high duty factor beam for SX
 - High-p beam line and beam facility for COMET (phase-1)
 - R&D for future experiments
 - muon $g-2$ /edm
 - neutron edm
 - neutrino detector developments

Beam time assignment before
summer shut down

RECOMMENDATIONS FOR BEAM TIME ASSIGNMENT AND PLANNING SINCE JANUARY TILL JUNE 2012

The PAC reiterates that the two goals with **the highest priority** are:

1) a timely delivery of neutrino beam at the highest intensity (integrated pot) to the T2K experiment and

2) the delivery of **improved slow extraction** beam to the hadron hall

any accelerator improvements can be realized during the summer 2012 shutdown.

Assuming that the horn magnet system is ready by the beginning of March, the PAC endorses the Lab's plan to have neutrino **fast-extraction beam from March through May and to have slow extraction in June.**

The schedule will be re-evaluated at the March PAC meeting when the status of the accelerator and experiments is clearer.

In the K1.8/K1.8BR beamlines, the PAC considers that

- completing the second physics run of the **E19 experiment has first priority.**
- Pilot runs for the E27 experiment in the K1.8 line and for the E15 experiment in the K1.8BR line are the second priority.
- In the K0 beam line, the PAC strongly supports **the calibration of the CsI calorimeter** by the KOTO
- The beam extinction test led by the MTF group is also very important and should be arranged to go ahead.
- The beam allocation for the autumn 2012 and winter 2013 runs will be discussed in July.

Beam usage up to now

- February
 - SX at 5kW tuned
 - second run of Θ search(E19) completed
- March
 - FX up to 137kW
 - lots of loss time due to accelerator and neutrino beam line problems

Beam time allocation

- The non-zero θ_{13} indicated by T2K 2010 data has been confirmed by Daya Bay result
 - Having both appearance and disappearance independent measurements is important
 - However, inefficient accelerator and neutrino beamline performance since March
 - Possible trials of improving statistics and associated risk of premature shut down
 - Full injection \rightarrow 165kW : Beam loss and activation may result longer shut down period of FX in the future
 - Shorter cycle time 2.96 s \rightarrow 2.56s not fully tested
 - Horn power supply operation at 250kA \rightarrow may break supply
 - June run by FX \rightarrow Slow extraction beam time must be compensated after summer shut down
 - T2K have to show convincing outlook in May to get significant results
- IPNS may want to adjust beam time allocation in June

Beam parameters

	137kW Achieved	160kW	182kW
Ion source	15mA	15mA	15mA
LINAC pulse width	500us	500us	500us
LINAC bunch thinning factor	28/32 87.5%	32/32 100%	32/32 100%
#p/bunch	1.05×10^{13}	1.19×10^{13}	1.19×10^{13}
MR rep cycle	2.92s	2.92s	2.56s
Horn current (sig decrease)	205kA (-14%)		



Reduce beam loss
At MR collimator
(close to capacity)

MR PS small
Modifiation

Summary

1. The accelerator upgrade for the fast and slow extraction
2. The plans for the hadron hall
 - usage of the south area where a conflict between the K1.1, the high-p and COMET beamlines
 - Priority of high-p and COMET phase-1
 - Possible beam time for P36
3. Trial of higher power at the earliest opportunity (even with risk) and possible June FX run, if a convincing arguments given in May