16th J-PARC PAC meeting

January 9, 2013

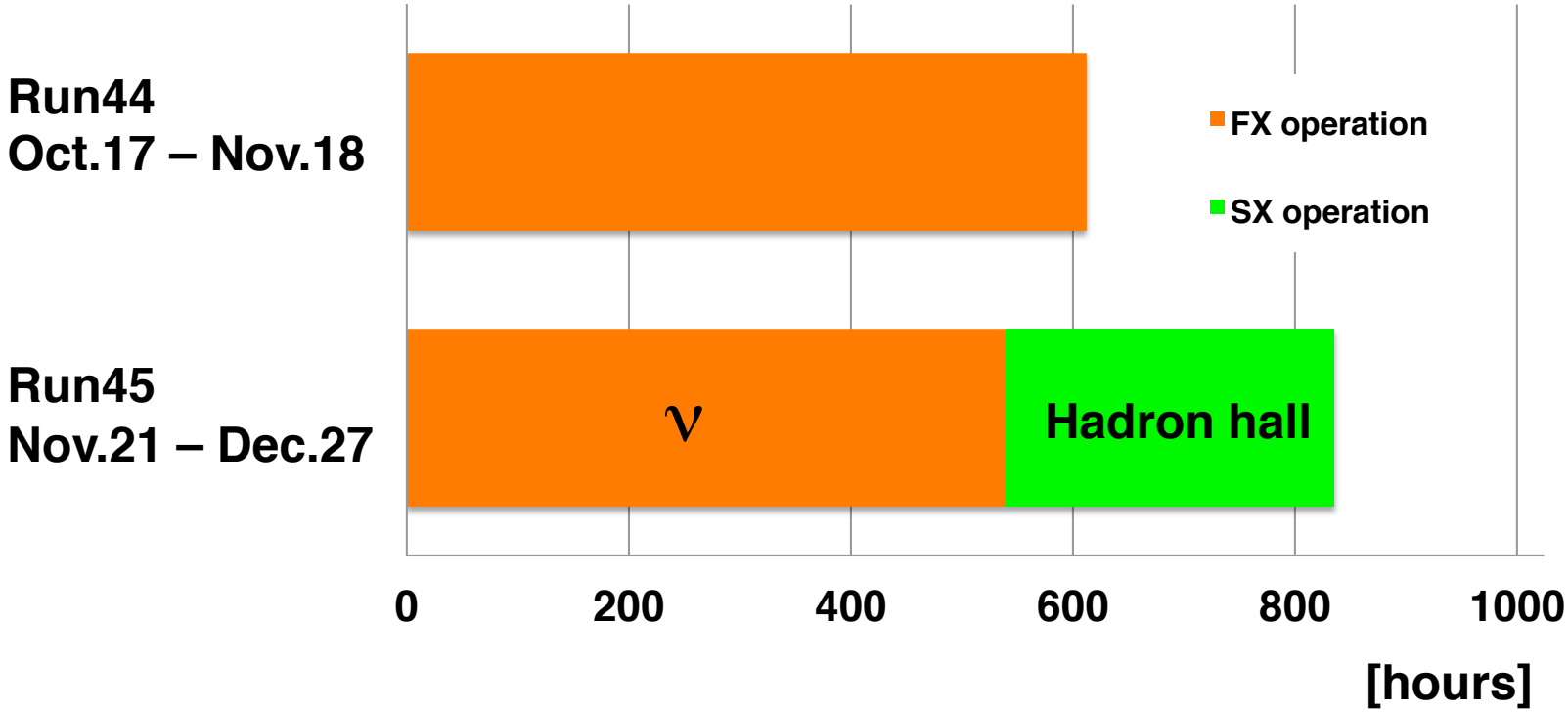
M.Yamauchi

KEK/IPNS

1. What have happened since the last PAC meeting
2. Run plan until summer 2013
3. Mandate to the PAC at this meeting

What happened after the last PAC meeting (1)

- Run until December 2012

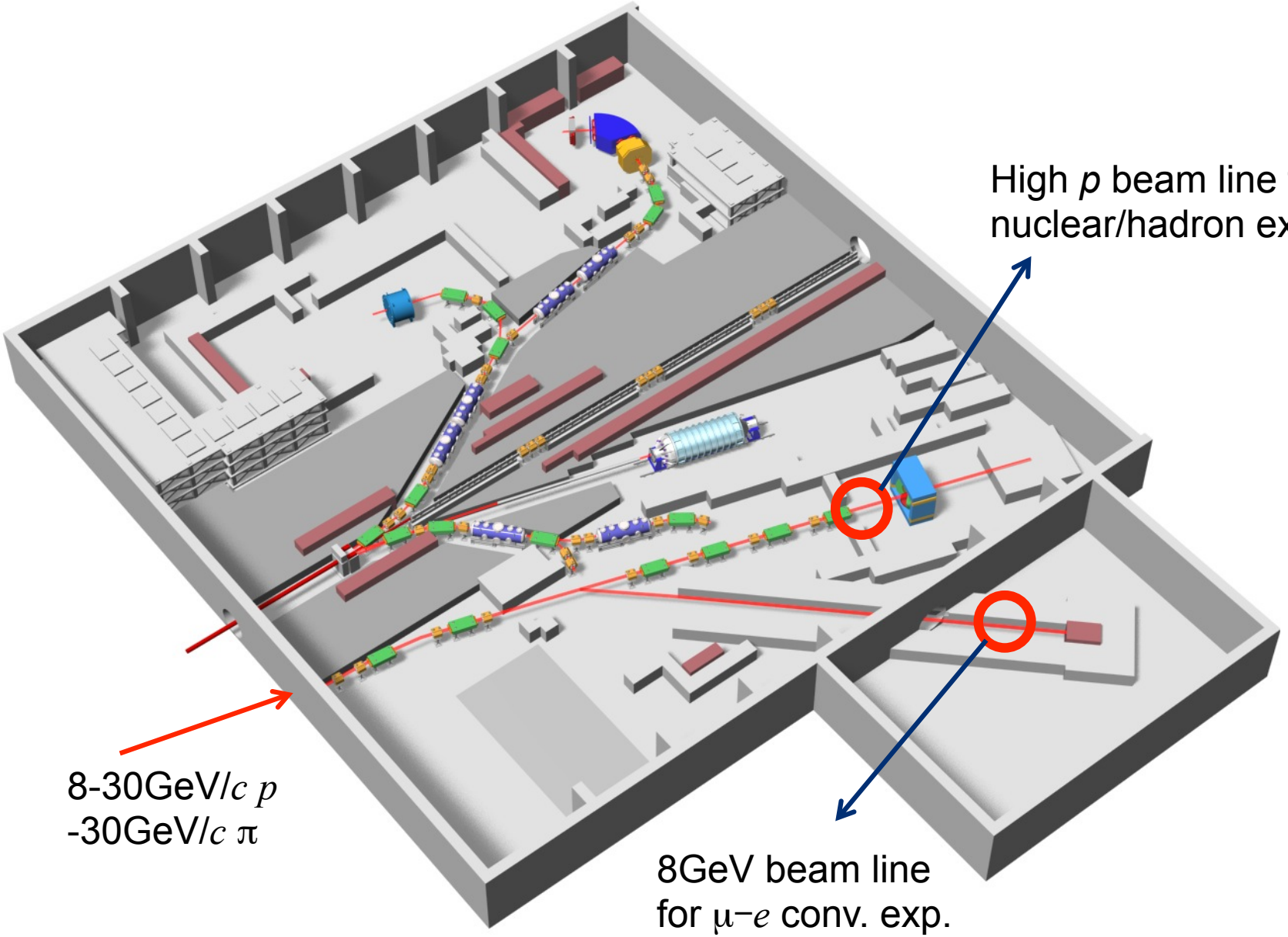


- Stable operation at 210kW(FX) and 12kW(SX)
- Vacuum leak at the neutrino beam line

What happened after the last PAC meeting (2)

- Governmental review of mid-term plan in JFY2013-2017 and beyond (November 9)
  - Note that this review was given in addition to the governmental review particularly for J-PARC in March-May 2012.
- Our proposal included:
  - Upgrade of MR to 750kW (FX)
    - New MR power supplies
  - New primary beam line for high-p experiment and COMET
- MEXT submitted budget request to MOF.
  - 2+3 year plan for MR upgrade
  - 3 year plan for the new primary beam line

New Primary Beam Lines



What happened after the last PAC meeting (3)

- Approval of test experiments by subcommittee.
  - Committee members: J.Haba, H.K.Tanaka and M.Ieiri
  - Conclusions will be reported at this PAC meeting.

- Finished
  - T47: Lead glass EMC and GEM tracker for E16
  - T48: Aerogel Chrenkov counter for E36
- Yet to be done
  - T49: 250L liq. Ar TPC
  - T46: Training course using hadron beam at EDIT

Test experiments

PROCEDURE OF THE APPROVAL OF SMALL EXPERIMENTS

The IPNS director proposed a scheme for approving small experiments, in response to the previous PAC's recommendation. A committee will be formed to assess experiments, which do not aim to get physics results, such as detector tests, and which do not require a long machine time or large financial support. The committee consists of the leader of the particle and nuclear physics division of J-PARC, the chairperson of J-PARC PAC and the chairperson of the FIFC. The committee will periodically report the status of these experiments to the PAC as requested. **The PAC endorses this proposal.**

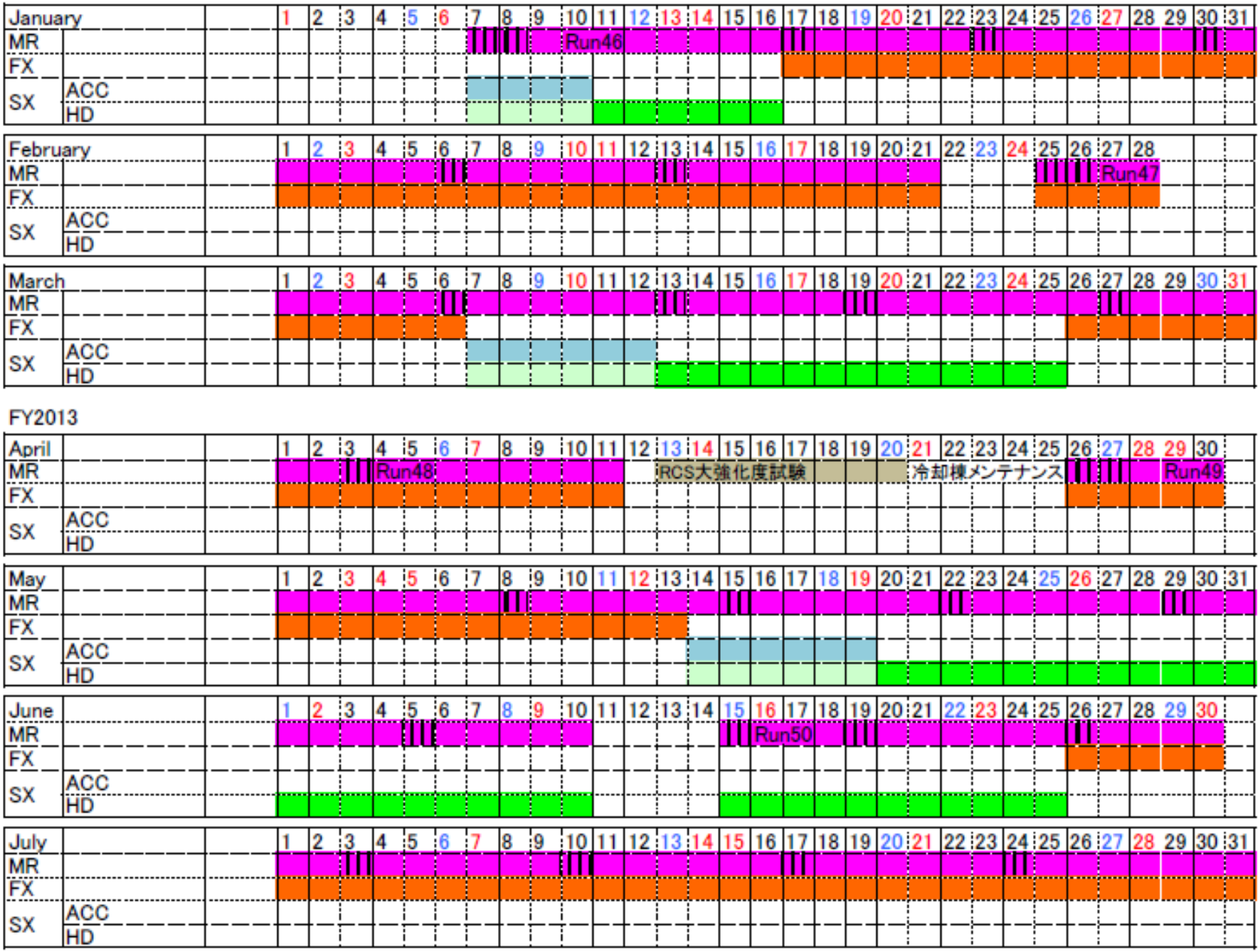
by 6th PAC meeting (October 2008)

Run plan in January - July 2013

- T2K has a higher priority to achieve 5σ test of ν_e appearance, BEFORE NOνA seriously joins the competition.
- For this purpose, we will continue the summer run until the end of July (i.e., one month longer than usual).
- We also assign 52 and 16 days to hadron experiments and machine study, respectively, in this period. →Ieiri's talk
  - E05,E10 and E13 at K1.8
  - E15 and E17 at K1.8BR
  - KOTO at KL
  - (E31) ← subject to approval by PAC
- Long shutdown is scheduled after summer 2013 to upgrade Linac to 400MeV. MR operation will be resumed early 2014. Run plan in 2014 will be discussed at the next PAC meeting.

- Do you endorse this run plan in 2013?

Run plan in 2013



Mandate of the PAC at this meeting

E31 (Hyperon below KN threshold, K1.8BR)

- Examine the request for stage-2 recommendation; consider the appropriate beam time slot at K1.8BR in conjunction with E15 and E17.

The proponents described the readiness of the experimental apparatus which is nearly the same as the one used for E15 except for the target. They also reported the performance of the liquid deuteron target and additional detectors. The PAC also heard a report from E15 about their detector performance observed in the recent run. The PAC has confirmed the readiness of the experimental apparatus. The proponents showed the expected yield for three $\Lambda(1405)$ decay channels for the proposed beam time request of 40 days with a 27 kW proton beam. However, it is not clear how well the experiment can clarify the nature of the $\Lambda(1405)$ such as the pole position of the KN bound state using the expected statistics of its spectra. The PAC requests that E31 clarify this point in order to justify the requested beam time before a stage 2 recommendation.

P45 (Three body reaction, K1.8)

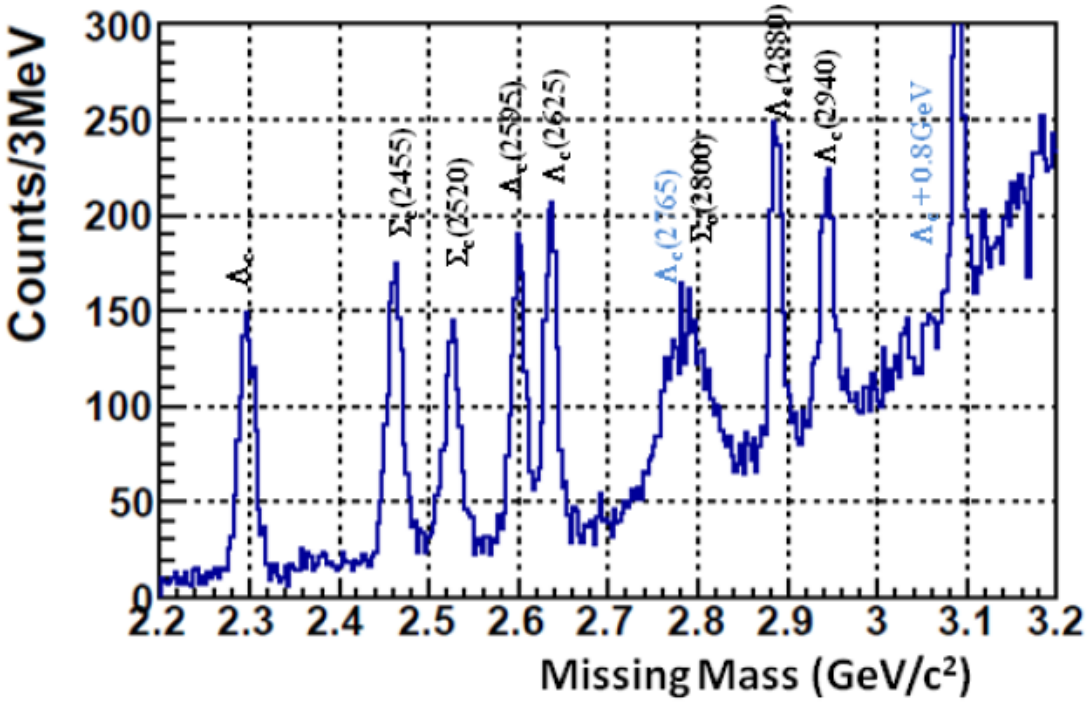
- Examine the request for stage-1 recommendation.

The PAC understands the importance of determining the nucleon resonance spectrum. This kind of effort will enhance the cooperation between the hadron physics program at J-PARC and the efforts at other hadron physics laboratories such as JLab. The PAC asks the proponents to answer the following points before promoting to a stage-1 status,

1. The proponents should provide more quantitative argument to show how the data of expected precision will contribute to the analysis of nucleon resonances.
2. The proponents should show how well the measurement of proposed reactions can be made in a full simulation.
3. The proponents should show more details about the modification of the detector system to be built in P42.
4. The proponents should discuss with P42 how they can contribute to the detector construction.

P50 (Charmed baryon spectroscopy, high-p)

- This is a new proposal at the high-p beam line.
- Evaluate the proposal for stage-1 status.



Summary of the mandate

- Examine the following proposals:
  - E31 (hyperon) requests for stage-2 approval.
  - P45 (three body) requests for stage-1 status.
  - P50 (charmed baryon) is a new proposal.

- Review status of the running experiments (E10, T2K, KOTO, E27) and readiness of the experiments in preparation (COMET, g_μ-2, LFU), and evaluate the run plan in 2013.

- Evaluate the construction plan of the test beam lines.

- Give any comments to the experimental program at J-PARC.

Information

- “Master Plan update in 2013” by Science Council of Japan (日本学術会議). Call for proposals is expected in February 2013. This will be an important input to “Roadmap of large scale research projects” to be released by MEXT in 2015.

- Proton Intensity Frontier Workshop (Dec. 20)

J-PARC: Future of Proton Intensity Frontier

December 20, 2012, Tokai

(jointly organized by J-PARC /KEK / HEP Com./ NP Com.)

- A day-long workshop to discuss 5-10 year plan with a possible accelerator upgrades e.g. Multi-MW beam
- Develop a deeper connection btwn physics "users" and accelerator group
- Demands from Physics side
  - Neutrino, Neutral Kaon, Stopped Kaon, Muon, Hadron, Strangeness
- Challenges in Accelerator Physics
  - Ion Source, RF Cavity, Power Supplies
- Resulted in a list of requirements for future machine