

# 17<sup>th</sup> J-PARC PAC meeting

September 25, 2013

M.Yamauchi

KEK/IPNS

1. What have happened since the last PAC meeting
2. Mandate to the PAC at this meeting
3. A few remarks on the future run plan

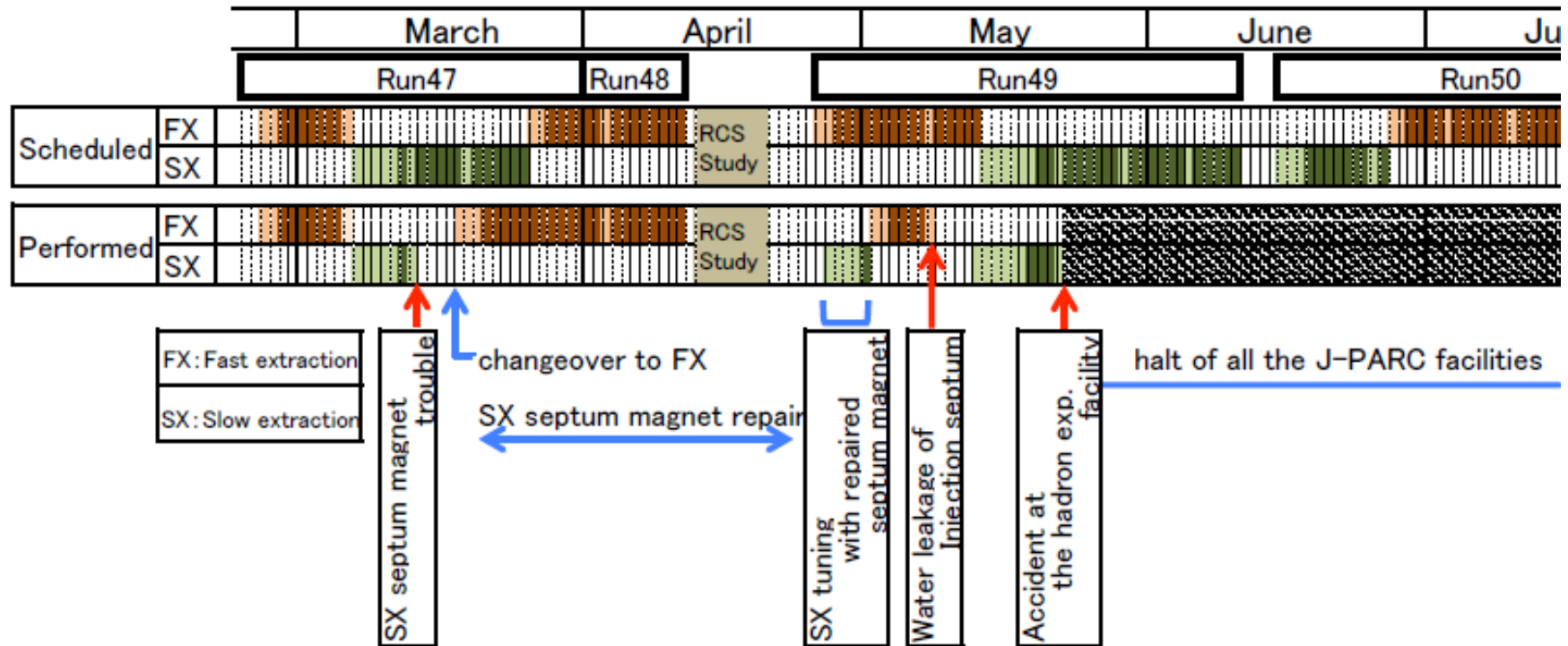
# Run plan in January - July 2013

Slide shown  
at January PAC

- T2K has a higher priority to achieve  $5\sigma$  test of  $\nu_e$  appearance, BEFORE NOvA 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. →leiri'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?

# What happened after the last PAC meeting (1)

- Run until May 23, 2013

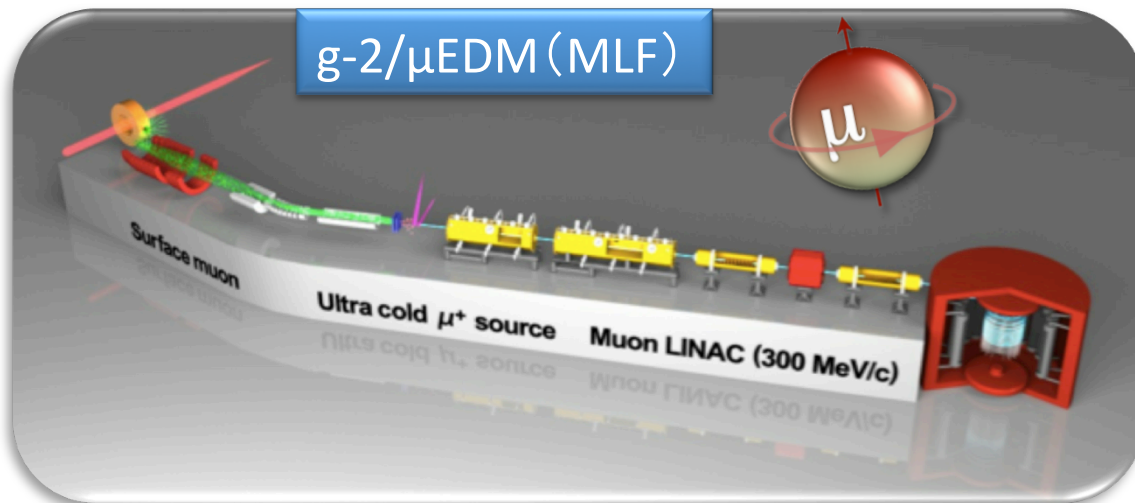
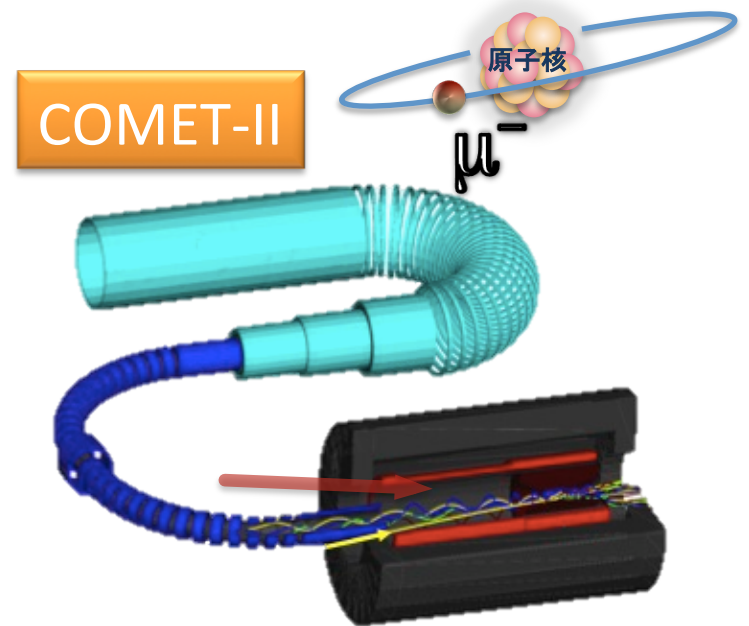
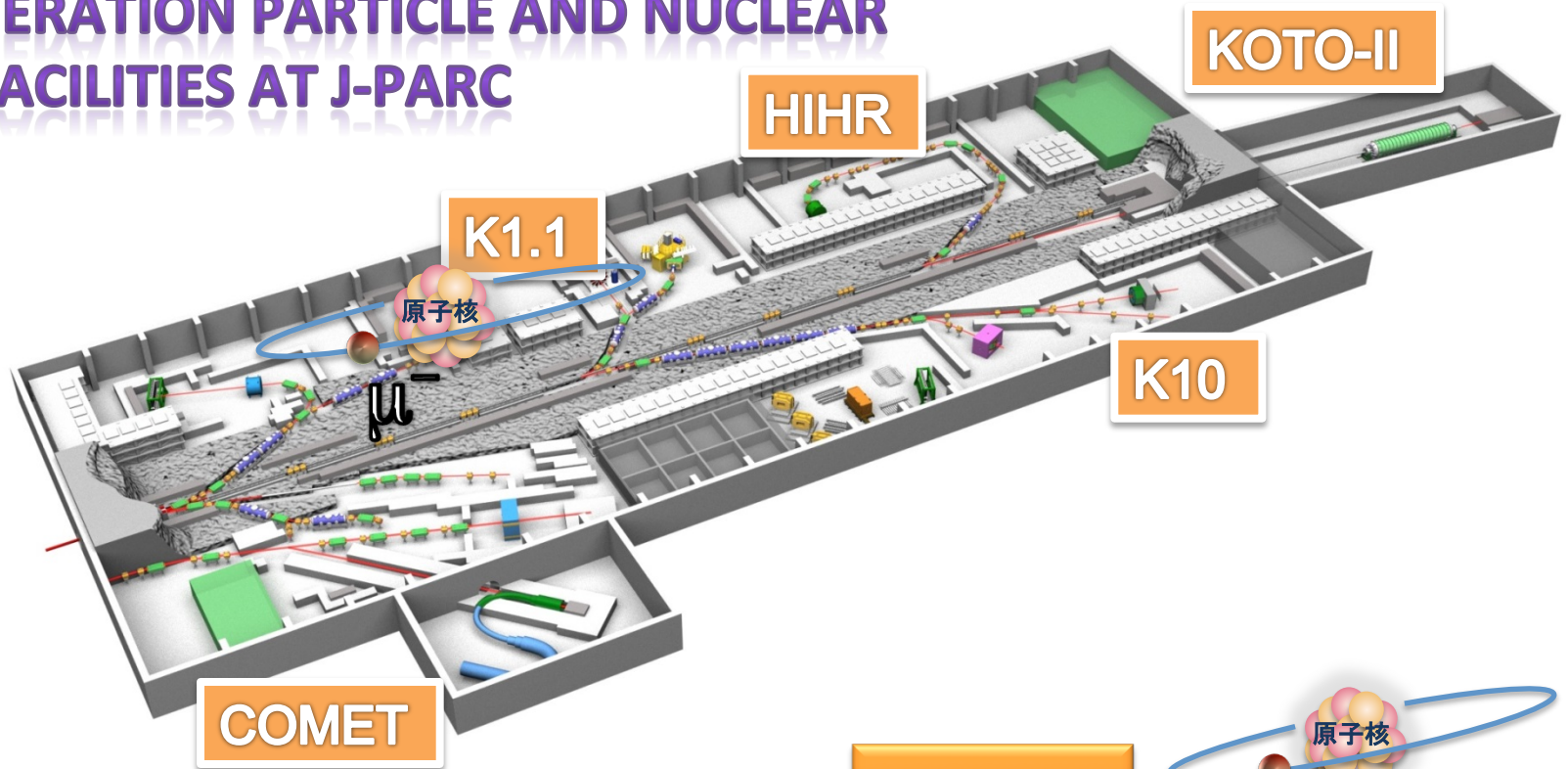


- Radiation accident at the hadron hall on May 23.
  - All the J-PARC accelerators have been shut off since then.

## What happened after the last PAC meeting (2)

- Proposal to “Master plan of large scale research projects” by Science Council of Japan.
  - Future plan of J-PARC facility
    - Hadron hall extension
    - Second phase of COMET
    - $g_{\mu}-2$  at MLF
  - Continuation of T2K with 750kW MR upgrade
  - Future neutrino program
    - Hyper-Kamiokande
    - (750kW operation of J-PARC MR)
- Note: High-p beam line and COMET phase-I have been funded.

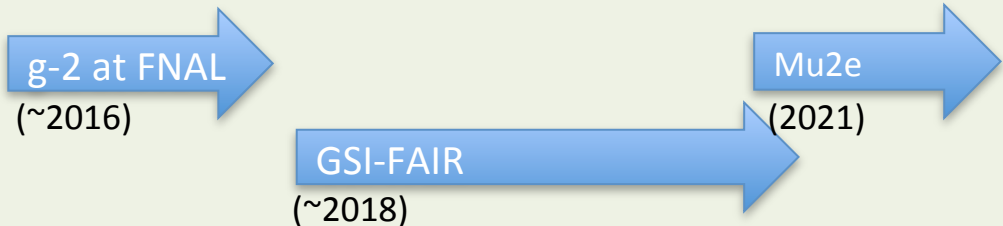
# NEXT GENERATION PARTICLE AND NUCLEAR PHYSICS FACILITIES AT J-PARC



# J-PARC upgrade plan

年次計画	H24 (2012)	H25 (2013)	H26 (2014)	H27 (2015)	H28 (2016)	H29 (2017)	H30 (2018)	H31 (2019)	H32 (2020)	H33 (2021)	H34 (2022)
加速器の高度化 (MRの増強)		Beam intensity upgrade					Further intensity upgrade				
ニュートリノ振動実験		T2K up to 750kW x 5yr.					Next generation long baseline neutrino exp.				
ハドロン実験		High-p beam line				Extension of hadron hall					
ミューオン素粒子実験		COMET-I				COMET-II $g_{\mu}^{-2}/\mu\text{EDM}$					
中性子・ミューオン 物質生命科学実験		Muon facility for material science					And its upgrade				

An early commitment is absolutely necessary to survive tough international competition.



# New test experiment proposals after the previous PAC

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- **Approved by sub-committee**

No.	Spokesperson	Affiliation	Title	Sub-committee
P51	S.Mihara	KEK	Research Proposal for COMET(E21) Calorimeter Prototype Beam Test	2013/2/18
P52	Y.Sugimoto	KEK	Test of fine pixel CCDs for ILC vertex detector	2013/4/17
P53	D.Kawama	RIKEN	Test of GEM Tracker, Hadron Blind Detector and Lead-glass EMC for the J-PARC E16 experiment	2013/4/17
P54	K.Miwa	Tohoku U	Test experiment for a performance evaluation of a scattered proton detector system for the $\Sigma p$ scattering experiment E40	2013/4/17
P55	A.Toyoda	KEK	Second Test of Aerogel Cherenkov counter for the J-PARC E36 experiment	2013/4/17

# Status of test experiments

No.	Spokesperson	Affiliation	Title	Run#	Status
T46	K. Ozawa	KEK	a practice experiment using a hadron beam for EDIT 2013	47	Stopped due to SX septum trouble
T47	Y. Aramaki	RIKEN	Test of Lead-glass EMC and GEM Tracker for the J-PARC E16 Experiment	45, 46	Finished
T48	A. Toyoda	KEK	Test of Aerogel Cherenkov counter for the J-PARC E36 experiment	45, 46, 47	Finished
T49	T. Kobayashi	KEK	Test for 250L Liquid Argon TPC	49	Not performed yet
T51	S. Mihara	KEK	Research Proposal for COMET(E21) Calorimeter Prototype Beam Test	47, 49	Not completed
T52	Y. Sugimoto	KEK	Test of fine pixel CCDs for ILC vertex detector	50	Not performed yet
T53	D. Kawama	RIKEN	Test of GEM Tracker, Hadron Blind Detector and Lead-glass EMC for the J-PARC E16 experiment	49, 50	Not performed yet
T54	K. Miwa	Tohoku U	Test experiment for a performance evaluation of a scattered proton detector system for the $\Sigma p$ scattering experiment E40	49, 50	Not performed yet
T55	A. Toyoda	KEK	Second Test of Aerogel Cherenkov counter for the J-PARC E36 experiment	49	Not completed

- For “not-completed or not-performed” experiments, I should ask them for future beam requests after restoration of the HD hall.



Mandate of the PAC at this meeting

## A. A schedule issue

- A complication appears due to a long shut-down of the hadron hall.
  - E13 with SKS spectrometer at K1.8
  - E07 emulsion experiment with Kurama at K1.8
  - E03 X-ray from Xi atom with Kurama at K1.8
  - E05 with new S2S spectrometer at K1.8
  - Construction of COMET/High-p beam line
  - Construction of K1.1 beam line
- A possible scenario will be discussed by Ieiri. Please give us your opinion.

## B. Review renovation plan of the hadron hall

- We now have a detailed design of target, target enclosure, ventilation and gas tightness system for the primary beam line, radiation monitor, etc.
- Review by the experts is scheduled October 8-9 in addition to many internal reviews in the J-PARC Center.
- Your critical comments will be highly appreciated.

## C. Review the experiments before May

- E11: Recent results from T2K
- Publications are anticipated from the two experiments using data taken before the January PAC.
  - E19: Pentaquark search
  - E27: Kaon bound state
- Progress report from the experiments after the January PAC.
  - E10: Neutron-rich hyper nuclei
  - E13: gamma ray spectroscopy
  - E14: KOTO
  - E15: Kaonic nuclear state

## D. Review physics program in the near future (1)

- E11: T2K
  - Run plan in the post  $\nu_e$  era
  - Long range scenario to challenge CPV beyond T2K
- Experiments at high-p beam line
  - Beam line construction
    - Need design review
  - E16: electron pair spectrometer
    - Is there a realistic experimental plan?
    - Stage-2 request?
  - P50: charmed baryon spectroscopy
    - Answers to the homework will be presented.

## D. Review physics program in the near future (2)

- E21: COMET
  - Beam line and facility
    - Need design review by technical advisory committee.
    - Especially, target system has to be designed very carefully.
  - COMET detector
    - TDR
- E34:  $g_{\mu}^{-2}/\mu$ EDM at MLF
- E36:  $K_e2/K_{\mu}2$ 
  - We still have a time slot for this experiment.

## E. New proposal: Search for sterile neutrino at MLF

- Agreement with IMSS and MLF on the approval procedure of particle physics experiments proposed hereafter at MLF
  - Stage-1 status is to be given by MLF-PAC.
  - MLF-PAC may request this PAC to give suggestions on physics case and technical feasibility of the proposed experiment.
  - IMSS/MLF will inquire IPNS on resource allocation before approving stage-2.
- We expect inquiry from the MLF-PAC in January 2014. Start reviewing physics potential and technical feasibility of this proposal to avoid unnecessary delay.

# Run plan

- Not known yet.
- Most likely, there will be no MR beam in this JFY, i.e., before April 2014.
- Plan in JFY2014 is subject to approval by the Japanese Government and the prefectural government. Careful negotiation is going on with them.